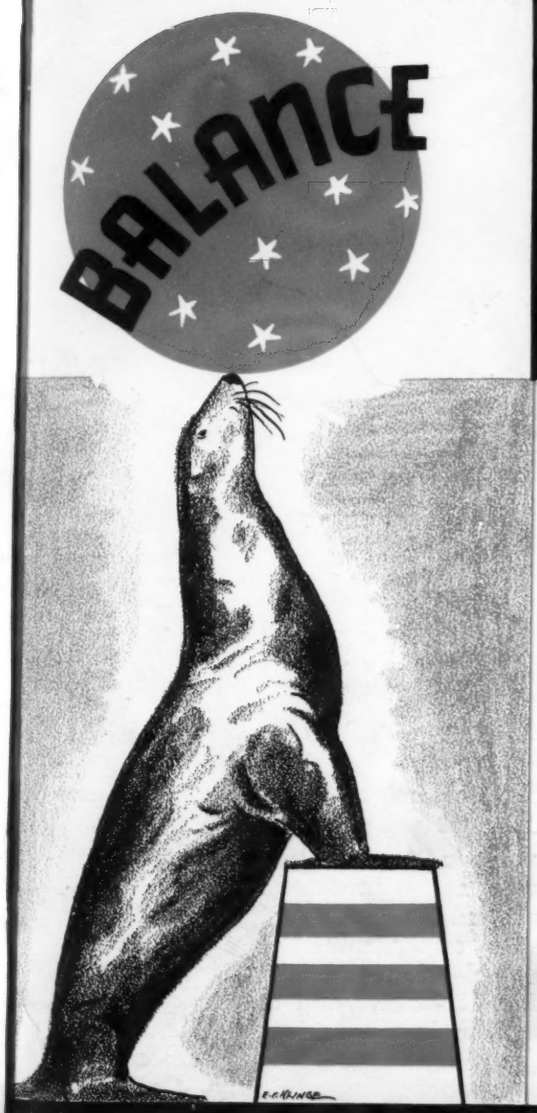
GAS

ENGINEERING • UTILIZATION • LOAD-BUILDING • MANAGEMENT



REYNOLDS
Gas Regulators

Nowhere is perfect balance more essential than in the proper control of gas. Reynolds Gas Regulators, proved by forty-five years of actual service in the field, continuously demonstrate their ability to give the proper amount of balance essential in every regulation requirement.

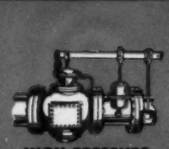
Write nearest Reynolds representative, branch office, or the factory for co-operation in solving your regulation problems.

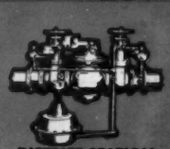
BRANCH OFFICES
421 Dwight Building
Kansas City, Missouri
2nd Unit Santa Fe Building
Dallas, Texas

REPRESENTATIVES
Eastern Appliance Company
Boston, Massachusetts
F. E. Newberry
Avon, New Jersey

REYNOLDS GAS REGULATOR CO.
ANDERSON, INDIANA, U. S. A.

RECOGNIZED GAS CONTROL SINCE 1892


HIGH PRESSURE


DISTRICT STATION

INDUSTRIAL

SERVICE

LOW PRESSURE

JUNE 1937 • • 25 CENTS

A *Cool* FIVE BILLION

Engineered to control both wind and water, Fluor Towers are free from wind blown spray. Result: water make-up requirements are reduced to the minimum. Another result: corrosion of nearby equipment is negligible. The patented Aerator design is standard on all Fluor Aerator Type Cooling Towers, from the smallest to the largest. For space economy, water economy, good appearance and long life, specify Fluor. Bulletin T236 contains valuable engineering descriptive matter.

If all the warm water that drips in one day over the cooling decks of Fluor Aerator Type Cooling Towers could be collected in one pool it would cover an area one mile wide, one foot deep and twenty-four miles long.

This incomprehensible aggregate of five BILLION gallons represents the requirements of Fluor-equipped plants at locations scattered all over the earth, from the frigid north to the scorching tropics. It is an impressive admission by industry of the economic advantages of Fluor Aerator Type Cooling Towers in terms of maximum temperature differential, minimum water loss and endless durability.

The Fluor Corporation was first to depart from commonplace and uncalculated design and construction of cooling towers; first to apply fundamental engineering principles derived from a scientific knowledge of water, wind and temperature; first to make these principles effective by the use of materials that permanently resist deterioration and decay—California Redwood, copper nails, wrought iron pipe, brass castings—all structurally assembled in one unit with a view to everlasting efficiency and economy.

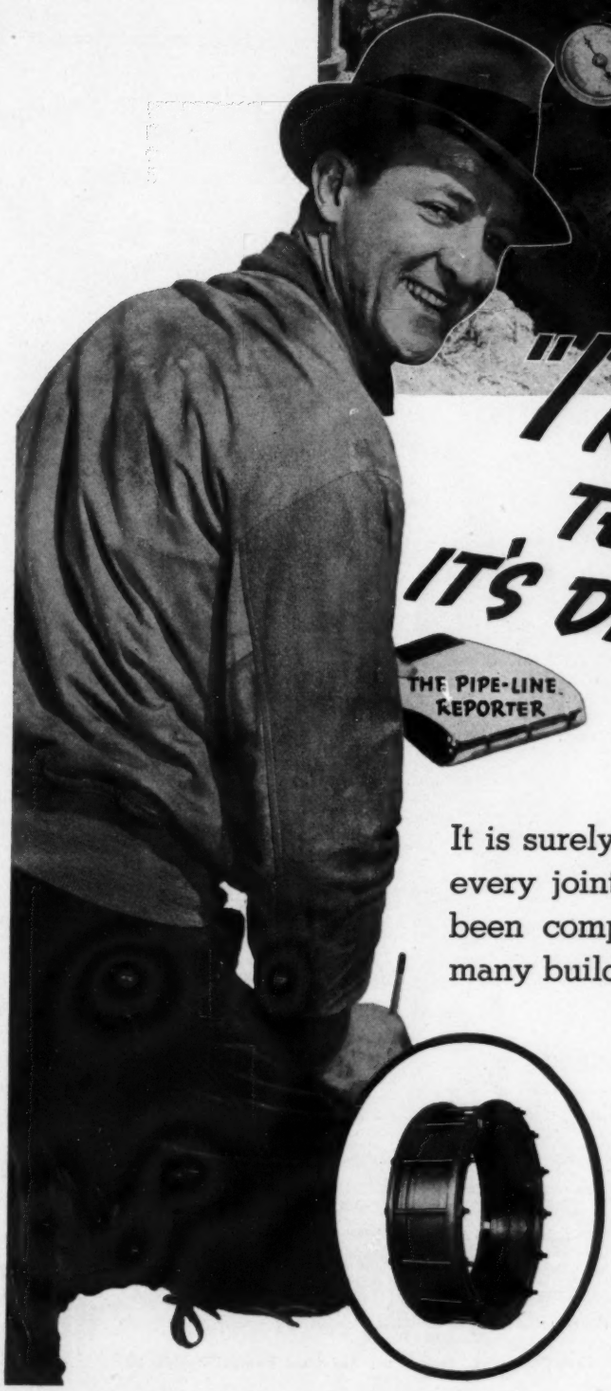
FLUOR BE SURE WITH FLUOR **AERATOR TYPE COOLING TOWERS**

THE FLUOR CORPORATION, LTD. Main Office & Plant: 909 E. 59th St., Los Angeles, Calif. • 909 McCormick Bldg., Chicago, Ill. • 703 Fairfax Bldg., Kansas City, Mo. • 934 M & M Bldg., Houston, Tex. • 710 Canadian Pacific Bldg., N. Y. C. • 719 McBirney Bldg., Tulsa, Okla.

Note to Reader

This is the fourth in a series of advertisements dramatizing one engineer's experience with his first Dresser-coupled line. For the complete story, write for Bulletin No. 351.

"I KNEW IT WOULD TEST TIGHT — IT'S DRESSER-COUPLED"



It is surely gratifying to have a new line test tight in every joint . . . especially when the line has already been completely backfilled, as is the practice with many builders of Dresser-coupled lines. • But, testing tight is only part of the Dresser story. Permanent tightness is an even greater advantage. This time-proved, Dresser advantage precludes those "unaccounted-for" losses that are often so troublesome and costly.

S. R. **DRESSER**
MFG. COMPANY, BRADFORD, PA.

In Canada: Dresser Mfg. Company, Ltd., 60 Front Street, West, Toronto, Ontario

The American Brass Co.	45
American Gas Products Corp.	—
American Liquid Gas Corp.	71
American Meter Co.	14
American Stove Co.	—
The Barber Gas Burner Co.	72
Barber-Greene	4
The Barrett Co.	3
Barton Brown Engineering Corp.	71
H. R. Basford Co.	80
Blaw-Knox Co.	81
The Bristol Co.	—
The Cast Iron Pipe Research Ass'n.	3rd Cover
The Chaplin-Fulton Manufacturing Co.	67
Clark Bros. Co.	11
Clark Hotel	80
The Cleveland Trencher Co.	10
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Crane Co.	74
Cribben & Sexton Co.	12
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Domestic Manufacturing Co.	76
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The National Supply Co.	5
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GAS

Reg. U. S. Pat. Off.

FORMERLY WESTERN GAS

LOS ANGELES Office: 810 South Spring Street. Phone Michigan 1481
CHICAGO Office: 1064 Peoples Gas Building. Phone Harrison 8536

JAY JENKINS, Publisher GEORGE H. FINLEY, Editor CRAIG ESPY, Mid-Western Manager
ARTHUR ROHMAN, Managing Editor ANATOL FOMILYANT, News Editor
W. G. RUSSELL, Field Representative

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June, 1937. Volume XIII, Number 6. G A S is published monthly by Western Business Papers, Inc., at 810 South Spring Street, Los Angeles, California. Subscription price (in advance), 25 cents the copy. $1.00 per year; other than U. S., $2.00 per year. Entered as second class matter August 20, 1936, at the post office at Los Angeles, Calif., under the Act of March 3, 1879. Copyright, 1937.

MEMBER AUDIT BUREAU OF CIRCULATIONS

OFFICIAL PUBLICATION: Pacific Coast Gas Association; Southern California Meter Association.

MEMBER: Audit Bureau of Circulations; Associated Business Papers, Inc.

Easy and Economical to apply . . .

Reproduction of the micrograph above shows the interlocking of the flakes of the internal reinforcement used by Barrett. By laminating with the waterproofing agent, they give Barrett Pipe Line Enamels unusual toughness and resistance to soil stresses.

For pipe of large diameter, The Barrett Company will furnish equipment required to revolve pipe and spread enamel.

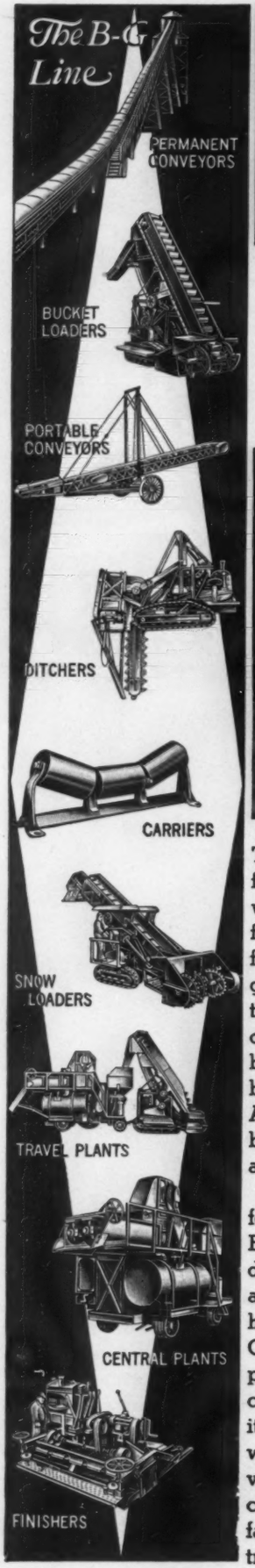
Courtesy Lone Star Gas Co., Dallas, Texas

EASE of application, even by unskilled labor—under the most severe limitations of field conditions—is an important advantage of Barrett Pipe Line Enamels. Their waterproofing agent is Coal-tar Pitch—processed with all the skill of Barrett's 83 years of experience. To this most stable of bituminous compounds Barrett adds a special flake-type reinforcement in proportions that have proved correct to insure economy that comes from long years of effective protection against adverse soil conditions.

FIELD SERVICE

The Barrett Company maintains a Pipe Line Service Department to assist engineers in all coating problems, and also has available Field Service men whose assistance is offered where Barrett's protective coatings are used. Inquiries are invited.

THE BARRETT COMPANY, 40 Rector Street, New York, N. Y.



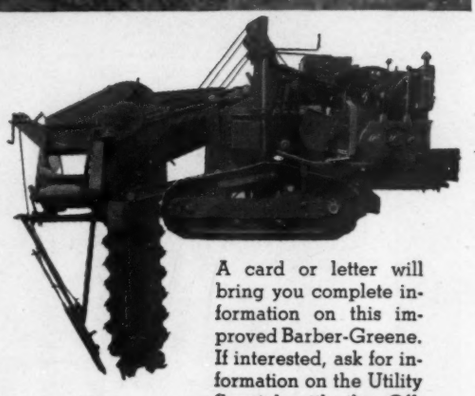
DESIGNED FOR

Intricate DITCHING

Barber-Greene SERVICE SPECIAL Model 64-B

There's nothing like the B-G Service Special for profitable ditching in residential districts, where walks, driveways, and curbs require frequent interruptions. There's nothing like it for trenching through the maze of uncharted gathering lines in the oil fields. It provides the fastest, cheapest ditching for conduit, and can be equipped with a special automatic backfilling conveyor for laying cable and backfilling just as fast as the machine digs. An auxiliary backfilling attachment powered by the ditcher engine is another standard accessory.

The machine is only 57" wide, digs five feet deep, 8" or 11" wide. It has the exclusive B-G Vertical Boom that goes straight down, digs flush to the pipe, walk, or curb, up over and down, leaving no ramp to be dug by hand. It has the exclusive B-G Automatic Overload Release that protects underground pipes as well as the machine. It has the exclusive B-G Self-Cleaning Buckets that give it a clean discharge on sticky soil. Its narrow width, and B-G full crawler mounted maneuverability make for faster, easier moving in close quarters. Its high traveling speeds allow fast traveling, and its light weight gives easy trailer hauling from one job to another.



A card or letter will bring you complete information on this improved Barber-Greene. If interested, ask for information on the Utility Special with the Off-Set Boom, the Pipe Line Special for fast cross country ditching, or the B-G Standard Ditcher that goes 8' 3" deep and 24" wide. There is no obligation.

Standardized Material Handling Machines

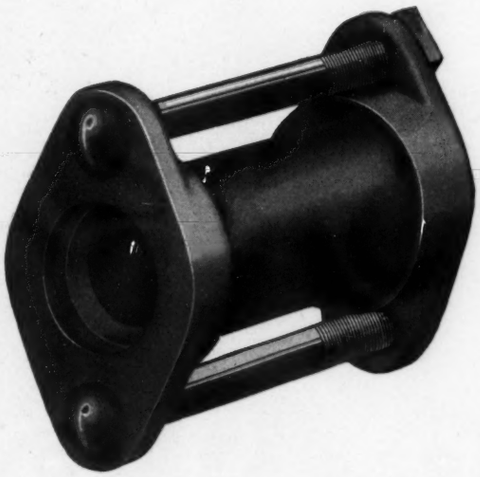
BARBER GREENE

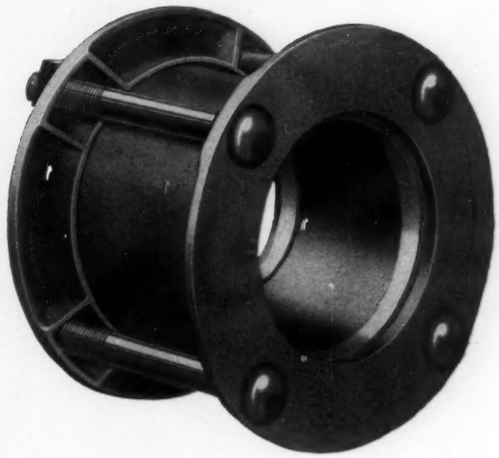
715 West Park Avenue
Aurora, Illinois

37-13

DAYTON

LIGHT WEIGHT COUPLINGS



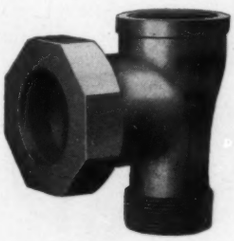


For use on thin walled pipe or low pressure installations.

★

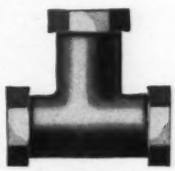
COMBINATION and BOLTLESS TYPE SERVICE FITTINGS

For relieving strain on main lines at the service connection.



No. 17
Service Tee

No. 18
Service Elbow 90°



No. 19
Boltless Type Tee

No. 20
Boltless Type Elbows 45°

No. 21
Boltless Type Elbows 90°

THE NATIONAL SUPPLY CO. OF DELAWARE
DAYTON COUPLING DIVISION · · TOLEDO · OHIO

Take no chances... use SEAMLESS!

NATIONAL SEAMLESS LINE PIPE

IN the laying of modern pipe lines everything that enters into investment has to be rigidly considered. Initial laying costs, upkeep of the line, and the maintenance of a uniformly good service are vital factors in relation to future profits. Why take chances in the choice of the most important item of the investment — the pipe — when chance can be eliminated? Play safe, install NATIONAL SEAMLESS, the ultimate in pipe reliability.

Pierced from a solid billet of the best quality open hearth steel, NATIONAL SEAMLESS PIPE is without a weld — no long line of possible weakness to fail during installation, or when the going gets rough.

For instance, when crossing ravines and rivers, when going around bends, and whenever pipe is subjected to severe and unusual strains, NATIONAL SEAMLESS offers the greatest reliability obtainable in any pipe today. And there is no chance of leaks developing on account of weaknesses in longitudinal welds, which means full delivery and maximum profits.

Call on NATIONAL engineers to explain the full advantages of "Walls Without Welds," and how SEAMLESS eliminates uncertainty, promises smooth installation, and long uninterrupted service.

NATIONAL TUBE COMPANY

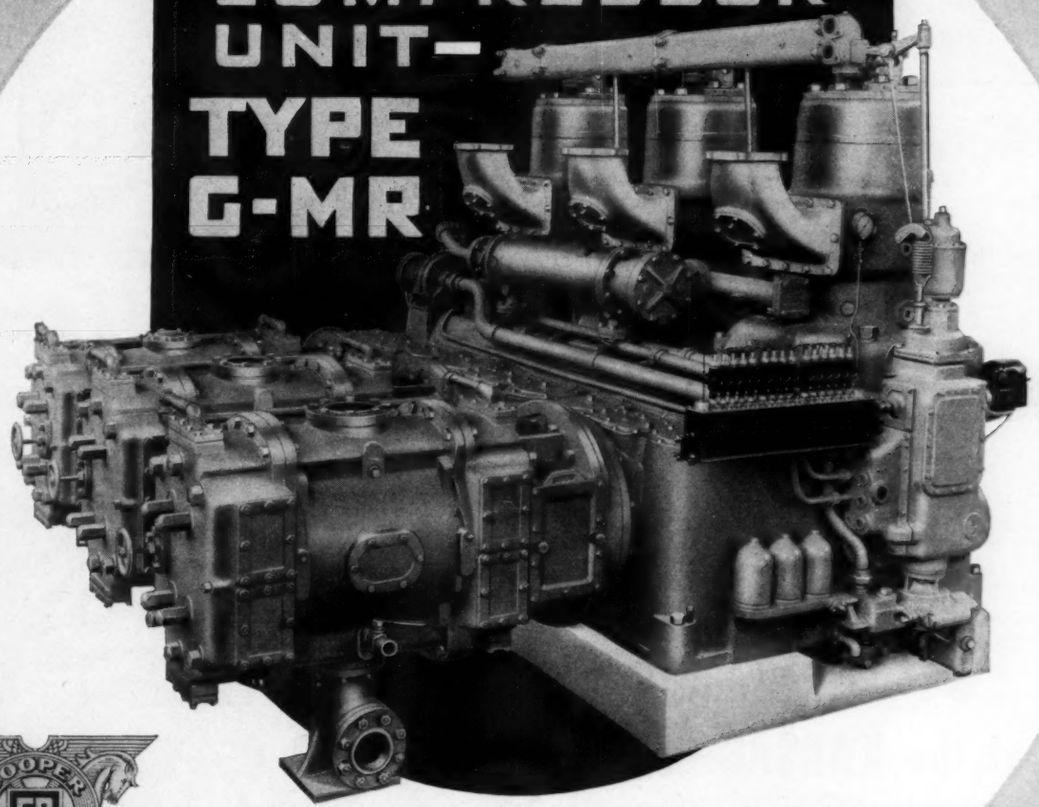
PITTSBURGH, PA.

United States Steel Products Company, New York, *Export Distributors*

UNITED STATES STEEL

Announcing

A New and Better ANGLE COMPRESSOR UNIT— TYPE G-MR



Type G-MR is a new type and size in the Cooper-Bessemer line of compressor units. Rated from 150 to 300 H.P., this *two-cycle* unit is built in two, three, and four cylinders — rated 75 H. P. per cylinder. Call our representative for details.

Features:

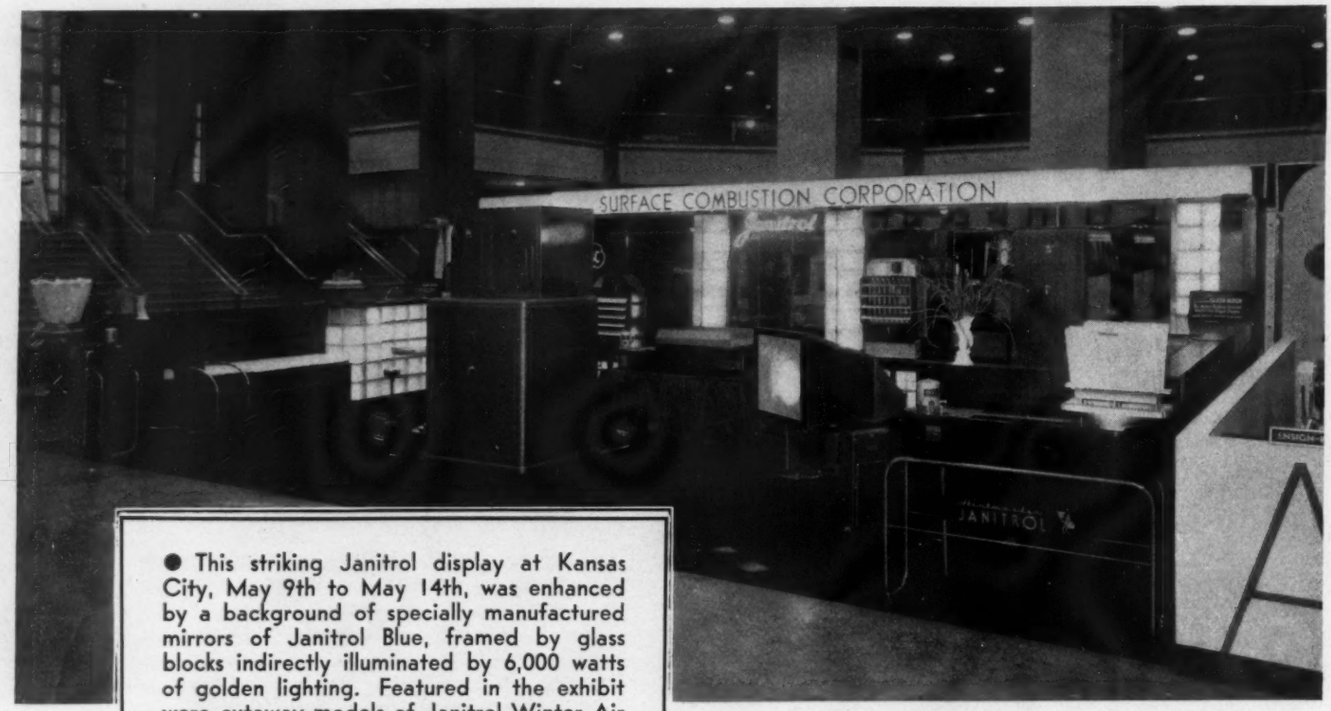
- ★ *Modern* — compact; more horsepower in less space.
- ★ *Convenient* — to transport, install, operate, and maintain.
- ★ *Reliable* — rugged; two-cycle; Cooper-Bessemer engineered.
- ★ *Economical* — "streamline" scavenged; more power with less fuel. New type power piston permits higher horsepower ratings.
- ★ *Lubricated* — by positive pressure to every single bearing.
- ★ *Cooled* — oil-cooled pistons; ample water-jacket space.

THE COOPER-BESSEMER CORPORATION

640 EAST 61st STREET . . . LOS ANGELES, CALIFORNIA

25 West 43rd St., New York City Mills Bldg., Washington, D. C. 631 Spring St., Shreveport, La. 201 East 1st St., Tulsa, Oklahoma Magnolia Bldg., Dallas, Texas Esperson Bldg., Houston, Texas

Mount Vernon, Ohio — PLANTS — Grove City, Pennsylvania



● This striking Janitrol display at Kansas City, May 9th to May 14th, was enhanced by a background of specially manufactured mirrors of Janitrol Blue, framed by glass blocks indirectly illuminated by 6,000 watts of golden lighting. Featured in the exhibit were cutaway models of Janitrol Winter Air Conditioners, Gravity Heaters and Unit Heaters. An automatic Baloptican projected interesting slides of Janitrol promotional activities.

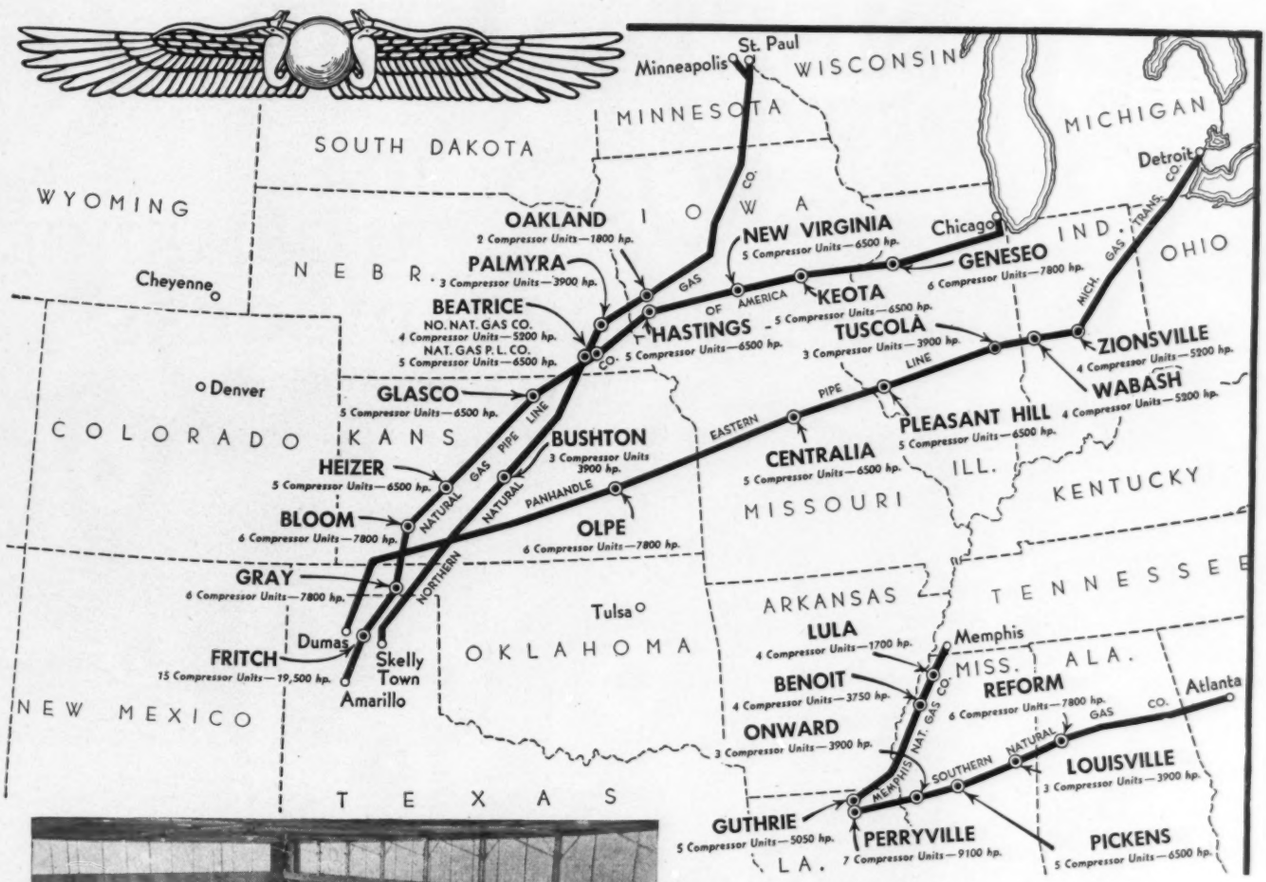
Our sincere thanks

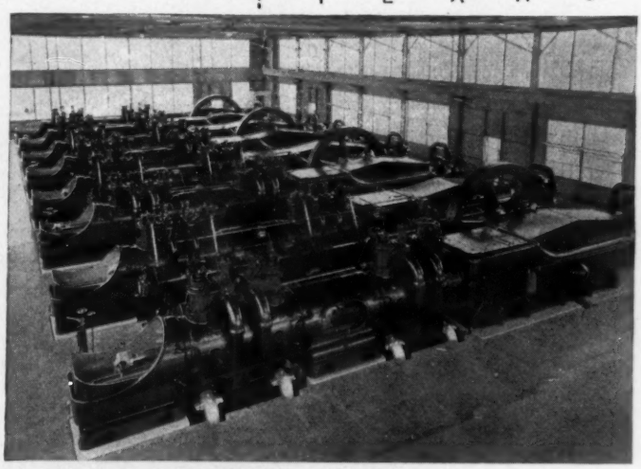
TO THE THOUSANDS OF GAS MEN who visited the *JANITROL EXHIBIT* at the KANSAS CITY NATURAL GAS CONVENTION

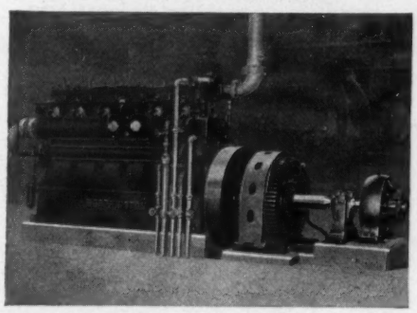
● We were glad to see you and pleased with the interest you manifested in Janitrol. In arranging the exhibit upon which so many of you have commented as "attractive," "striking," "impressive," we hope that we have not only shown you that Janitrol has the style, salability and efficiency that builds gas load, but that we have also impressed you with the completeness of our sales training, merchandising and advertising cooperation. Here is a program concentrated on the sale of gas heat that is unprecedented in the industry. If you did not have time in Kansas City to get full details, write us now for complete information. Surface Combustion Corporation, Toledo, Ohio.

Janitrol . . . **A COMPLETE LINE OF GAS-HEATING EQUIPMENT MANUFACTURED BY**

SURFACE COMBUSTION CORPORATION, TOLEDO, OHIO







Above: Four Worthington 1300-hp. 24"x 36" Twin Tandem Gas Engine Gas Compressors

Left: Worthington 180-hp. Vertical Gas Engine . . . as installed for station service on the several lines

26 MORE

WORTHINGTON COMPRESSORS 31,420 ADDITIONAL HORSEPOWER TO THE MAJOR GAS COMPANIES

. . . since January 1, 1937

LEADING all others in 1936, these additional units amplify further Worthington's standing, bringing the total horsepower on the above lines to 173,500 — installed or on order.

The fast growing list of Worthington installations . . . both main pipe line compressor units and gas engine power units for station service . . . is but logical recognition of consistent outstanding performance, in every application.

GC7-1

WORTHINGTON PUMP AND MACHINERY CORPORATION

General Offices: **HARRISON, NEW JERSEY** - *Branch Offices and Representatives in Principal Cities throughout the World*

WORTHINGTON

YOU NEED THEIR—
PROVED
ECONOMICAL
PERFORMANCE
CLEVELAND BABY DIGGERS

THE Baby Digger meets squarely all your requirements for digging gas trench. Maximum usability and uninterrupted performance are the characteristics you have a right to expect and demand of a trencher. The compactness, mobility, and power built into the Baby Diggers assure you of this type of performance. Only 58 inches in over-all width, the Baby Digger is available for work in the most confined spaces. Minimum clearance for obstructions is thus provided simultaneously at both sides of the machine.

Digging widths range from 10½" to 23½". Digs to 5'6" in depth. Thus it is usable on both small and large pipe-diameters.

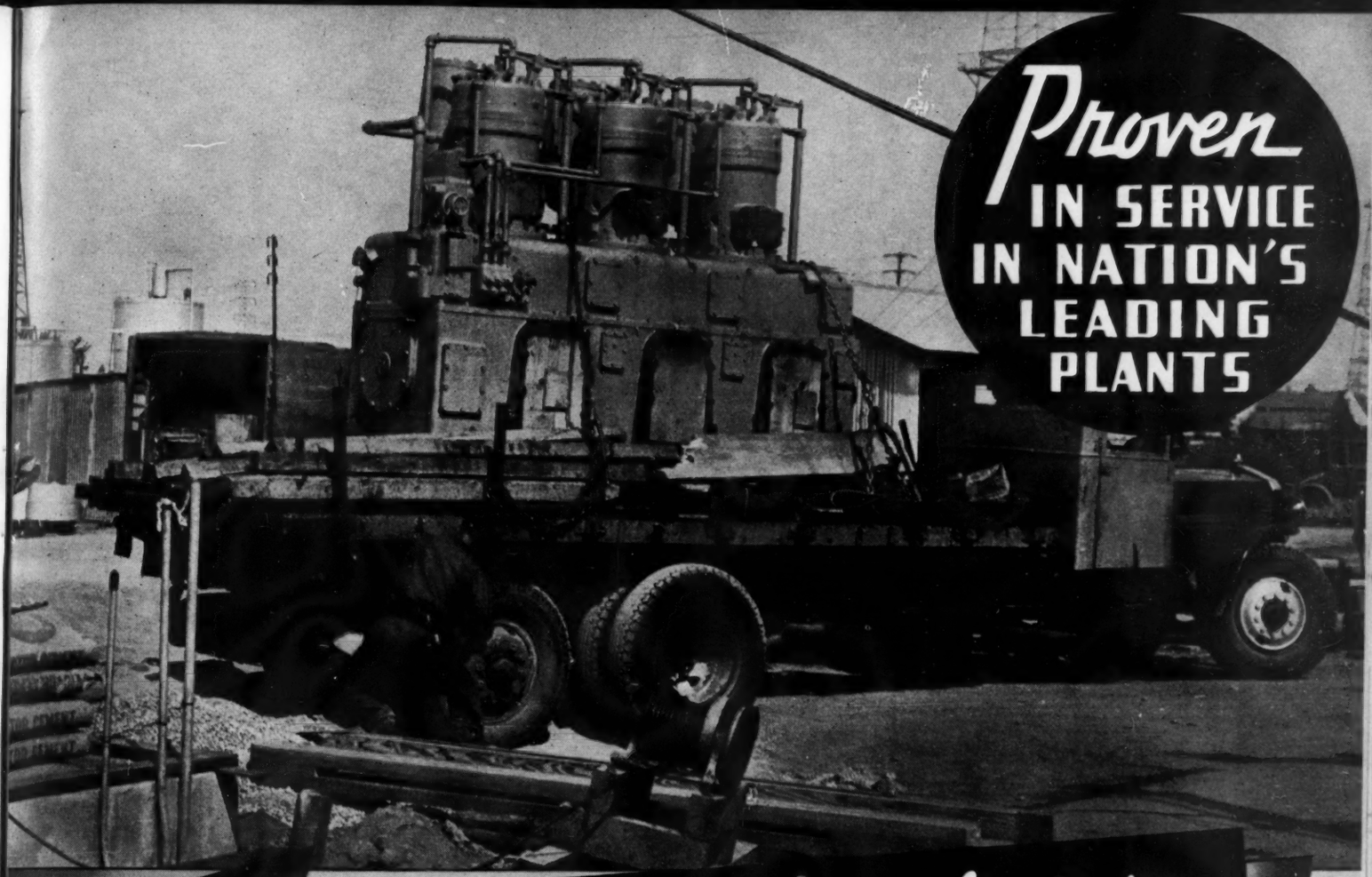
Through the application of the most modern methods of quality construction, the Baby Digger is comparatively light in weight. This means exceptional mobility. Five minutes loads or unloads it on its own specially-built trailer, and it travels at truck speed from location to location. Thus it makes machine-digging economical on many short jobs at some distances apart, speeding up your work as well.

Experience has proved that its inbuilt features provide maximum utility, minimum operation costs and widest application to your work. This is the type of performance you need on your work and will find only in this Cleveland Baby Digger Model 95. Write for details immediately.

THE CLEVELAND TRENCHER COMPANY

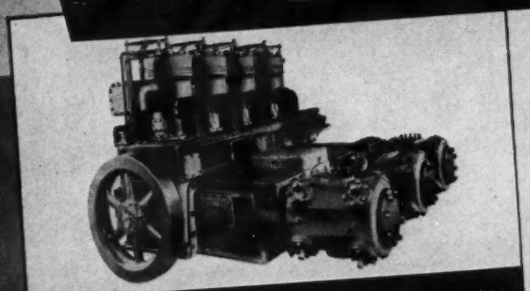
20100 St. Clair Ave. Cleveland, Ohio

The CLEVELAND BABY DIGGER Model 95

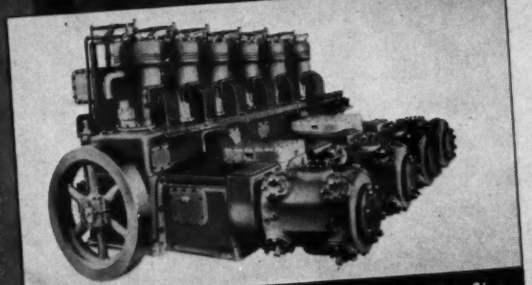


Proven IN SERVICE IN NATION'S LEADING PLANTS

A Big Compressor that is PORTABLE!



CLARK Super-2-Angle Compressor — 4-Cylinder Size, 400 H. P.



CLARK Super-2-Angle Compressor — 6-Cylinder Size, 600 H. P. Also built in 2 and 3-Cylinder sizes.

The CLARK "Super-2-Angle" represents a REVOLUTIONARY change and improvement in large compressors. Among its entirely new advantages, PORTABILITY stands out as highly important. The "Super-2-Angle" is shipped *assembled*. This greatly reduces cost of transporting and erecting.
4 other important savings are introduced by the "Super-2-Angle", viz:

SMALLER FOUNDATION due to compact right-angle design
LESS FLOOR SPACE, SMALLER BUILDING
FUEL ECONOMY, due to CLARK Super-2-Cycle Fuel Injection
LOWER MAINTENANCE due to extreme simplicity of design and few parts.

The CLARK "Super-2-Angle" offers other highly valuable improvements. On the market a full year, it has been proved in actual use, in the nation's leading plants. Write for literature or

See CLARK Section, 1937 Composite Catalog

CLARK BROS. COMPANY . . . . . Olean, New York, U.S.A.

Export Office: 30 Rockefeller Plaza, New York. Midcontinent Sales Offices and Warehouses: Tulsa, Okla., and Houston, Texas. West Coast Office: Smith-Booth-Usher, 2001 Santa Fe Av., Los Angeles, Cal. Foreign Offices: 72 Turnmill St., E. C. 1, London, England; 4 Str. General Poetas, Bucharest, Roumania.

CLARK

The Gas Service is only as Modern as the Gas Range

THE STANDARD OF COOKING PERFORMANCE DEPENDS ENTIRELY ON THE DEVICES CONTAINED IN THE RANGE

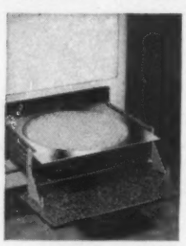
The Universal with its advanced devices—presents an entirely new and higher standard of cooking performance.

Simmer-Save Burner

Universal Gas Ranges simplify home cooking and place it on a new and higher plane of convenience and modernity . . .

★ The Universal Gas Range is a precision cooking machine that promotes new and higher standards of cooking performance. The advanced devices contained in Universal Gas Ranges make possible this superior performance. In every division of cookery, in every phase of use in which a gas range is utilized, Universal gives a degree of service that definitely establishes a new conception of convenient, efficient operation. The Universal, because of its outstanding performance, not only creates consumer good will, better appreciation of the merits of gas service, but also goes a long way towards placing gas in a preferred position in the public's mind as the "Ideal Cooking Fuel."

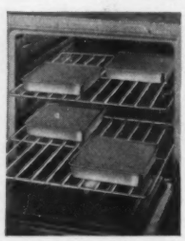
Reinforced Quality Construction



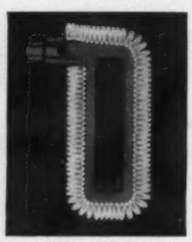
In-A-Drawer Broiler

Thriftop and Thrift-Grates

Savory Smokeless Cast Aluminum Broiler Grid

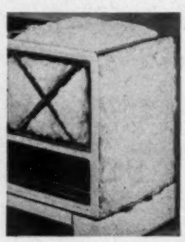


Oversized 20" Deep Precision Oven



Equalator Precision Low Temperature Oven Burner

Automatic Oven Heat Control with Thermal Eye



Heavily Insulated Oven

Self-Lighting Top Burners

Universal Gas Ranges

MANUFACTURED BY CRIBBEN & SEXTON COMPANY, 700 N. SACRAMENTO BOULEVARD, CHICAGO, ILLINOIS

GAS
June, 1937

Guest Editorial

SALES . . . The Major Objective

By B. C. ADAMS
Vice-President and General Manager
The Gas Service Company
Kansas City, Missouri

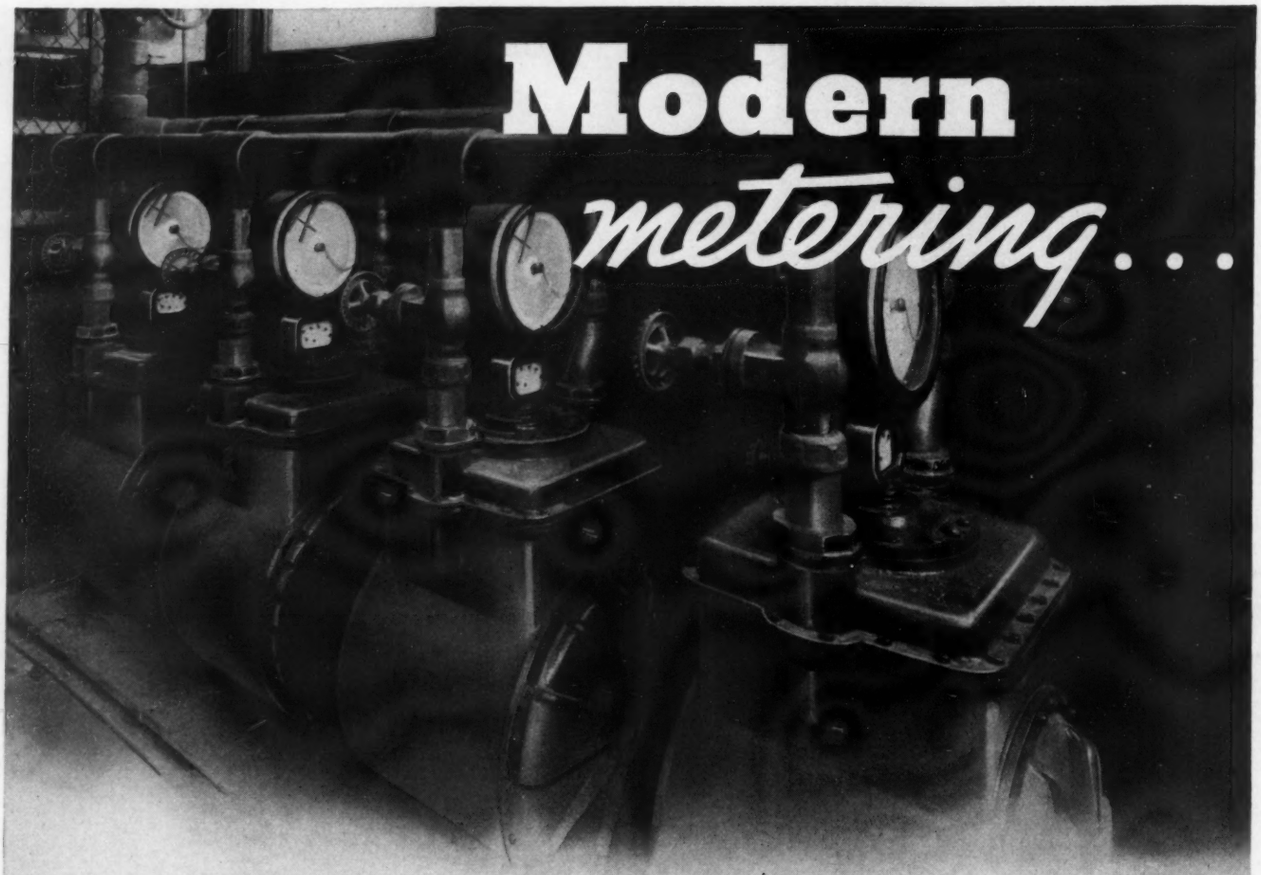
THE phenominal growth in accomplishments of the natural gas industry make a wonderful and inspiring picture to which every one in the industry can point with pleasure and pride. Through the development of the natural gas production areas, and the solving of problems of long distance transmission, natural gas has been made available to people of communities far removed from the source of supply. Thus, natural gas service has expanded in comparatively few years to the present day position, and now reaches some of the more populous centers in this country.

It may be said that we are now actively in the selling period of our business. Increased attention is being given on every hand to the problems of ways and means of successfully building up gas sales to insure and increase our future prosperity, as well as meeting the ever increasing competition from those agencies who seek to replace with their services, natural gas in the home.

Gas appliance and equipment manufacturers associated with our industry have made particularly rapid strides during the last few years in the development and improvement of equipment. This is most essential to success in carrying out programs of business development as well as insurance of gas loads. With the improvements in business, we feel that associated manufacturers will be in a position to carry forward more rapidly than in the past their program of equipment development.

It is most gratifying to us that the Natural Gas Department of the American Gas Association selected Kansas City for the annual meeting last month, at which meeting were discussed the problems of the industry, their causes and effects, and which aided in paving the way for continued business success. In connection with this meeting, the manufacturers offered a marvelous exhibit and we feel all the more honored because this was the first exhibit in connection with Natural Gas Department meetings since the department met in Kansas City in 1929.

Our organization will welcome in the future the return of the Natural Gas men to Kansas City.



Modern *metering* . . .

BATTERY OF FOUR METRIC IRONCASE METERS installed at the Mueller Brass Company, on the lines of the Detroit Edison Company of Port Huron. The four Ironcase 60-B Type Meters here utilized have a capacity of 950 cu. ft. each per hour at ½" loss, and 2000 cu. ft. each at 2" loss of water.

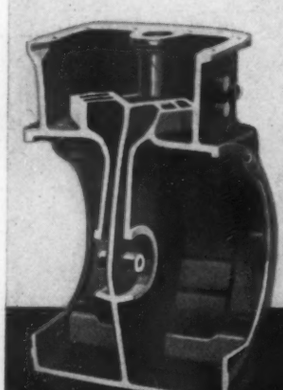
METERS SET UP in parallel, as here shown, offer important advantages in industrial gas measurement. An uninterrupted, complete chart record of the load is insured . . . permitting the proving of meters, one at a time, or even cutting out any meter from the line for overhauling. Each meter is equipped with a Westcott Volume and Pressure Gage, which charts hourly rate of gas flow and pressure.

Metric Ironcase Meters in sizes 5-B to 500-B, include types to meet both the usual and the unusual in service requirements . . . each type designed specifically for the work intended to be performed. The processed one-piece body construction not only brings additional strength, safety and corrosion resistance. It also eliminates internal leaks.

To achieve and MAINTAIN the high Metric standard of accuracy, the friction loss is held to a minimum . . . by valves of perfected design and precision movement . . . improved bearings, lubrication methods and stuffing boxes . . . specially developed diaphragm construction and operation. Metric Ironcase design utilizes the slide valve and full bellows principle . . . your assurance of reliable performance throughout the Metric line.

The operating advantages of Metric Ironcase Meters are detailed in Catalog EG-40 . . . mailed upon your request.

815



One-Piece Body Casting, Eliminating Internal Leaks

Established 1836

AMERICAN METER COMPANY

INCORPORATED

PACIFIC METER WORKS • LOS ANGELES • SAN FRANCISCO

June, 1937

GAS

Vol. XIII, No. 6

THIRTEENTH YEAR OF PUBLICATION

LOS ANGELES—810 South Spring Street. . 1064 Peoples Gas Building—CHICAGO

COMPETITION FOR THE DOMESTIC FUEL DOLLAR

By HERMAN RUSSELL

Rochester Gas & Electric Corporation*

I shall confine my remarks to a discussion of the domestic fuel situtation. This is the front of attack today upon our industry and whether we are selling natural, manufactured, or a mixed gas, it is essential to the future of the gas industry that we retain possession of this market. What I have to say comes as the viewpoint of a combination gas and electric executive, and only after a very careful study of this subject, both from the angle of what is best for the customer and what is best for the company.

HERMAN RUSSELL

The Rochester company has an investment of approximately $50,000,000 in its electric properties and $22,000,000 in its gas properties. Its securities, bonds and preferred stocks are issued on the combined properties, and they are widely distributed among the public. Therefore a determination of the right promotion and sales policy as between gas and electricity is of vital importance. If the domestic fuel market is to become electric, then the $22,000,000 of gas investment must be gradually written off. The possession of the domestic market is not a matter of fuel cost, for electric ranges and water heaters are being sold even in natural gas territory where the competitive fuel cost is much in favor of gas.

Last year, 1936, according to figures prepared by the Statistical Department of the American Gas Association, the sales of natural gas in the United States amounted to 1,240,986,000,000 cu. ft., and the total revenue from sales was $412,649,000. Domestic sales including house heating were 346,396,000,000 and the revenue from this source was $236,962,000. The domestic sales were 28 per cent of the total in cu. ft., but 57 per cent of the revenue. The average rate for domestic business was 68c as compared with 20c for commercial and industrial.

These figures show the tremendous importance of the domestic market to the natural gas industry and the necessity of holding and extending this market if our industry is to prosper. The battle for this market is being fiercely fought — coal, oil, gas, electricity are the contestants. Victory will go to that industry which has most to offer to the consumer in the way of appearance, convenience, low cost and performance. The weapons of warfare are intensive sales campaigns and a well organized research program. Gas has many advantages to offer in the way of economy and performance, but unless intelligent and energetic use is made of the weapons with which the battle must be fought, the fight will be lost to our competitors.

The cheapest is not always the best, nor does the public always buy that which is best. People buy because they are not satisfied with what they have and effective salesmanship operates to create dissatisfaction and desire in the minds of the customer. The electric industry competing for the domestic market offers a striking example of what effective sales and showmanship can accomplish in the face of heavy odds as to cost and performance. Today the public is definitely "electric minded." The housewife has seen electricity take the drudgery out of her daily work; electric lights have replaced oil lamps; electric washing machines, the backbreaking laundry tub; the vacuum cleaner, the broom; the refrigerator, the ice box; electric toasters, ironers, percolators, curling irons, all offer her their aid; the radio brings entertainment. The appeal is made on the grounds of health, comfort and modernity. Today the woman in the home and the man as well, is ready to accept the electric range and water heater as the future if not the present appliance to do the cooking and heat the water for the household. Very recently a domestic market survey was made in Rochester by a well known national agency. A summary of the information from the first 400 of these homes

* Presented before the American Gas Association Natural Gas Department Convention, Kansas City, Mo., May 10-14, 1937.

has been tabulated and reveals some interesting information.

Cooking

1. Ninety-eight per cent of the customers do their own cooking.

2. Only 20 per cent have ever seen a home service demonstration.

3. Forty per cent not interested in home service demonstration. Twenty per cent would prefer individual home service demonstration. Forty per cent would prefer group home service demonstration.

4. Approximately 50 per cent use oven three or less times a week; about 40 per cent three or more times a week, and 10 per cent occasionally, or don't know.

5. Sixty per cent prefer flat table top range. Thirty per cent prefer oven above burners. Ten per cent, no preference.

6. About 40 per cent not familiar with features of modern gas range.

7. Relative features of gas and electric ranges indicate considerable lack of knowledge:

	Comparative Data			
Ranges	Gas	Elec.	Same	D.K.
Speed of cooking..	157	37	15	191
Coolness	19	208	24	149
Cooking results ...	58	41	64	237
Cleanliness	7	260	29	104
Auto controls	9	135	27	229
Appearance	14	157	101	128
Length of life....	94	34	24	248
Extra features ...	11	111	30	248
Cost to buy.....	102	112	14	172
Cost to operate...	103	103	9	185

Water Heating

1. Approximately 8 per cent have automatic gas water heaters. About 70 per cent have side arm tank heaters of which 35 per cent have furnace coil attachments. Twenty-two per cent using jack pot stoves, etc.

2. Average age of automatic water heaters was found to be 5½ years. Average age of side arm tank heaters is 8 years with better than 20 per cent of them more than 10 years old.

3. Approximately 76 per cent thought gas was best for water heating; 13 per cent preferred coal; 4 per cent preferred oil, and 7 per cent would like electric.

4. Almost 70 per cent claimed they had all the hot water they needed.

Refrigeration

1. Electric refrigerators showed a 30 per cent saturation, gas refrigeration, 2.5 per cent; ice boxes, 60 per cent; and balance none.

2. Electric refrigerators average 4 years old, gas averaged 2.8 years and ice boxes more than 10 years.

3. As in the case of ranges, the survey indicated customers know very little concerning the relative features of gas and electric refrigeration:

	Comparative Data			
Refrigerators	Gas	Elec.	Same	D.K.
Speed of freezing.	10	63	34	293
Silence	28	39	8	225
Food preservation.	12	52	79	257
Appearance	8	48	124	220
Length of life....	50	46	14	290
Moving parts	49	48	7	296
Extra features ...	10	47	42	301
Cost to buy.....	50	65	26	259
Cost to operate...	61	63	19	257

Automatic Househeating

Fourteen per cent expressed a preference for gas; 8 per cent for electric; 36 per cent for oil; 16 per cent for coal; and 26 per cent don't know or would not buy automatic equipment.

Advertising

Radio program—56 per cent don't know; 20 per cent don't like.

Newspaper advertising—48 per cent haven't noticed or had any opinion; 8 per cent don't like.

The *Messenger*, a pamphlet delivered to each customer monthly, very well liked—53 per cent liked; 31 per cent not noticed; 16 per cent no opinion.

Kitchen Modernization

1. Almost 50 per cent thinking of modernizing their kitchens.

It is evident from the conditions disclosed by this survey that in Rochester—and I am certain the same is true in other cities—the housewife is decidedly electric-minded and that it will require a well planned intensive sales and advertising effort and the replacement of old gas equipment with modern appliances if this domestic market is retained for gas. It is also apparent that the public has not been sold on the value of an adequate supply of hot water instantly available. Extensive studies of the domestic load which have been recently made by the Company's rate engineer's, not only in Rochester but in many other cities, show that from both the customer and the Company standpoint, gas service for cooking and heating—in respect to cost of operation and results obtained — is superior to electricity. These studies have been made on both a pro rata and an increment basis and show that in all ordinary situations the customer can secure this service at a lower cost by using gas as a fuel rather than electricity, with equal or better operating results and in combination companies with equal or better net return to the company. If you are interested in the detail of these studies, I refer you to a recent paper presented by the speaker at the Indiana Gas Association Convention entitled "Economics of the Domestic Load and Consumer Research"; to a paper presented by Mr. R. E. Ginna at the last A.G.A. Convention entitled "The Future of the Gas Industry"; and a paper by the same author at the New England meeting in January this year entitled "Appraising Domestic Competition." While these studies were made largely from a manufactured gas standpoint, the results are all the more favorable for gas in those cities and sections where natural gas is distributed because of the lower gas cost.

What then must the industry do to retain the domestic load which it now has and still further increase this business? The answer lies in the selling and research fields. Enjoying as we do advantages over other fuels as to cost and performance, the public should be told these facts over and over again in a manner that will register in its mind. There must be far greater sales effort, more showmanship, more advertising, more man

(Continued on Page 72)

Calendar

June

American Gas Association, Industrial Gas Section — Industrial Gas Sales Conference, Chicago, Ill., June 8-9.

Canadian Gas Association—30th Annual Convention, Chateau Laurier Hotel, Ottawa, Canada, June 10-11.

New York-New Jersey Regional Gas Sales Conference—Westchester Country Club, Rye, N.Y., June 10-11.

Public Utilities Advertising Association — Hotel Pennsylvania, New York, N.Y., June 22.

Compressed Gas Manufacturers' Association—Annual summer meeting, Seaview Golf Club, Absecon, N.J., June 24-25.

American Society of Heating and Ventilation Engineers—New Ocean House, Swampscott, Mass., June 24-26.

July

Michigan Gas Association—Grand Hotel, Mackinac Island, Mich., July 1-3.

August

Pacific Coast Gas Association — Olympic Hotel Seattle, Wash., Aug 17-19.

September

American Gas Association—Cleveland, Ohio, week of September 27.

Midwest Section, National Bottled Gas Association—Cleveland, Ohio, sometime during week of September 27.

October

Chicago Exposition of Power and Mechanical Engineering — New International Amphitheater, Chicago, Ill., October 4-9.

American Society for Metals—1937 Metal Congress and Exposition, Atlantic City Auditorium, Atlantic City, N. J., October 18-21.

National Bureau of Standards—Conference on Corrosion and Protection of Pipe Lines, National Bureau of Standards, Washington, D.C. In October. Definite date to be announced later.

Sales, Conservation Keynote Topics At Kansas City Natural Gas Meeting; Delegate Registrations Total 2692

GRATIFYING to gas men and appliance and equipment manufacturers was the sight that the Association of Gas Appliance and Equipment Manufacturers' exhibits presented at the American Gas Association Natural Gas Department Convention held in Kansas City, May 10-14. Marking the first time in eight years that manufacturers have participated with exhibits in the Department's conventions, the results were profitable to both the gas men and exhibitors, who together made a total of 2692 registered delegates. Over 3500 visited the exhibits.

While the attendance record, which surpassed the 1936 convention banquet count of 1423 by a sizable figure was indicative of the great success of the convention, it was the equipment exhibits and the locale which brought to mind the May, 1929, meeting in Kansas City. Then over 1200 natural gas men gathered for the second annual convention since the Natural Gas Association amalgamation with the A.G.A. at the meeting in Dallas, 1928. Not since the 1929 Kansas City meeting had there been a manufacturers' exhibit, and the return to this practice was enthusiastically approved by all attending.

Interest in the opening session and throughout the convention centered about the industry's two prime problems—Sales and Conservation. Conservation through more equitable gas/oil ratios and through widespread repressuring of fields received much attention. Also, as will be seen from the following review of the program, transmission pipeline and compressor station efficiencies were of vital concern.

Opening Session

While the exhibition hall in Kansas City's six and a half million dollar Municipal Auditorium was opened at noon Sunday, May 9, the sessions program got under way officially at two o'clock Monday with the first general session. Chairman George E. Welker introduced Dr. Burris A. Jenkins, pastor of the Community Church, Kansas City, who gave the invocation. Major T. J. Strickler then introduced the Honorable Bryce B. Smith, Mayor of Kansas City, who extended the city's welcome to visiting delegates. Mr. Welker followed with the chairman's address in which were briefly reviewed the industry's accomplishments during 1936. Notable advances include national advertising, an all time high in gas production, a record breaking sales year, the rebirth of a manufacturers' organization (A.G.A.E.M.), the progress made by the A.G.A. Laboratories, and the increased interest in sectional association meetings.

GAS STAFF REPORT

G. E. WELKER

R. W. HENDEE

Mr. Welker was followed by Herman Russell, president of the American Gas Association, presenting an address which appears on page 15 of this issue. After this address, Chairman Welker called L. B. Denning, president of the Lone Star Gas Corp., from the audience for a few extemporaneous remarks which keynoted optimism in the outlook for the natural gas industry based on its past progress and its present statistical position. Next on the program was an address by Major Alexander Forward, managing director of the A. G. A. Mr. Forward outlined the continual efforts being made for gas conservation, and expressed the Natural Gas Department's regrets at losing the services of Secretary A. E. Higgins, whose energies and capabilities have been largely responsible for the growing success of department activities during the past six years.

Dr. John W. Finch, director of the Bureau of Mines, then read a paper prepared by himself and A. G. White, Chief of Petroleum Economies division, Bureau of Mines, entitled "Economic Trends in the Consumption of Natural Gas." The first general session was closed by an *In Memorium* by W. C. Grant, director of public relations of Lone Star.

Tuesday morning's general session, with H. C. Cooper presiding, was opened by a brief Report of Main Technical and Research committee by Chairman Cooper, followed by Report of Gas Measurement Sub-Committee by Chairman T. R. Weymouth. First paper of the morning, "Report of Gas Well Deliveries Sub-Committee," by N. C. McGowen, Chairman, in the author's absence, was read by R. H. Hargrove of United Gas Public Service Co. "Report of Pipe Line Sub-committee" by Chairman H. D. Hancock was next. Illustrating his paper with slides, W. H. Deaton of the Bureau of Mines next presented his paper on "Hydrates." To assist natural gas men in the conversion of manufactured gas communities to natural gas, George M. Parker of Mississippi River Fuel Co., contributed "Review of Present Methods of Making Manufactured Gases," pointing out the properties of these gases as they differ from natural gas and thus affect burner conversion. Tuesday afternoon was left open to give delegates the opportunity of examining appliance and equipment displays.

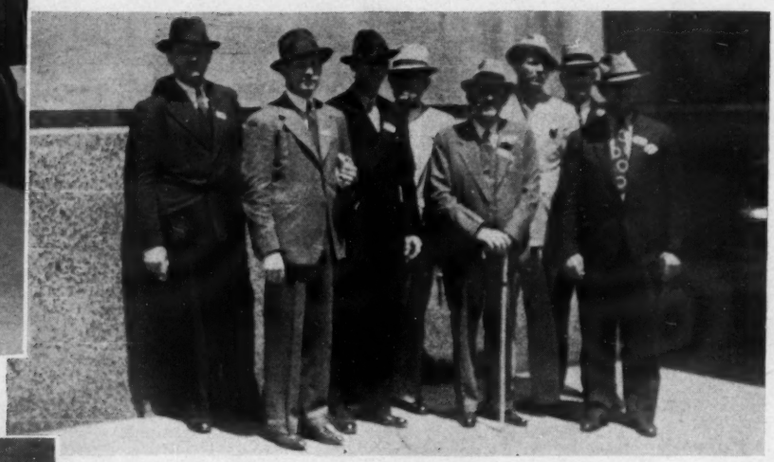
Entertainment

On Tuesday evening delegates relaxed at the Smoker in the Ararat Temple, which featured boxing

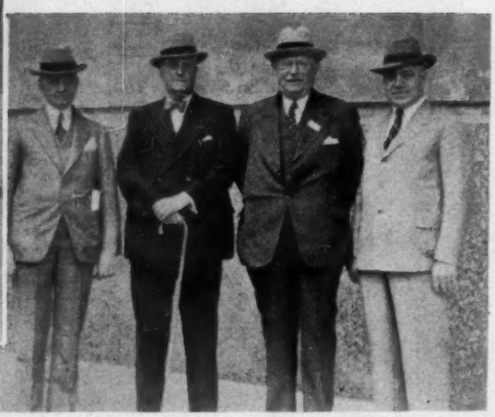
GAS CAMERA GOES

BY PASSING out pralines, a southern confection, these two southern "mammies" seek to impress JAY BARNES, New Orleans Public Service Co., CAPT. A. E. HIGGINS, retiring secretary of the American Gas Association Natural Gas Department; and J. WALKER ROSS of New Orleans, which city is seeking the 1938 Natural Gas Department Convention.

THE CAMERA rounds up a herd of Texans from Dallas: DON SILLERS, Lone Star Gas Co.; L. A. BICKEL, and G. W. MARTIN, Dallas Gas Co.; A. L. BRADFORD, Lone Star; L. G. WASKOM, Dallas Gas; E. E. STOVALL, Lone Star; J. H. BAXTER, Inland Gas Corp., Ashland, Ky.; and R. M. SCHOFIELD, Lone Star.



CONVENTION HOSTS: Major and Mrs. T. J. STRICKLER of Kansas City.



EXECUTIVES: COL. M. W. WALSH, distribution superintendent, Louisville Gas & Electric Co.; FRED A. MILLER, board chairman, S. R. Dresser Manufacturing Co.; FRANK L. CHASE, vice-president and operating manager of Lone Star; and J. D. CREVELING, Panhandle Eastern Pipe Line President.

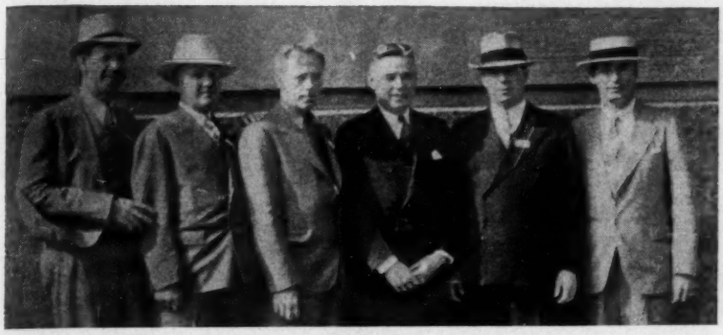
FROM COAST to coast the delegates came: B. M. LAULHERE, Southern California Gas Co., Los Angeles; W. P. HUTCHINSON, Sprague Meter Co., Bridgeport, Conn.; and H. D. HANCOCK, Cities Service Gas Co., New York.

Conventioneers E. R. BRODEN, Blaw-Knox Co., Pittsburgh and CHAIRMAN GEORGE E. WELKER, United Natural Gas Co., Oil City, Pa.

UNDER THEIR HATS HIDE A. E. SCHWARZ, Bryant Heater Co.; A. D. KERR and L. B. NICHOLSON, United Gas Public Service Co.; and JAMES F. ORR, Central Illinois Public Service Co.

TO KANSAS CITY

STOP ME, if you've heard—C. H. ZACHRY and L. L. BAXTER, Southern Union Gas Co., T. E. BULLION, Detroit-Michigan Stove Co.; R. J. CANIFF, Ruud Manufacturing Co.; W. G. WIEGEL, Lone Star; and F. C. ARMBRUSTER, Middlewest Service Corp.

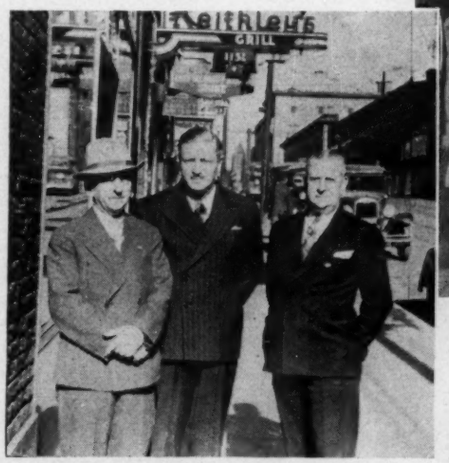


SHOULDER TO shoulder stand CARL TREVITT, Community Natural Gas Co., Dallas; JACK LITTLE, Detroit-Michigan Stove Co., Dallas; E. C. WHITCOMB, Lone Star Gas Co., Fort Worth; WM. J. HILL, Detroit-Michigan Stove Co., Detroit; F. M. ROSENKRANS, The Gas Service Co., Kansas City; and C. B. WILSON, Arkansas Louisiana Gas Co., Little Rock.

THEY CAME from Missouri: W. L. JONES, sales manager, St. Louis County Gas Co.; ROBERT THOMPSON, St. Louis Ruud distributor; and GEORGE SCHLATTER, sales manager, Laclede Gas Light Co.

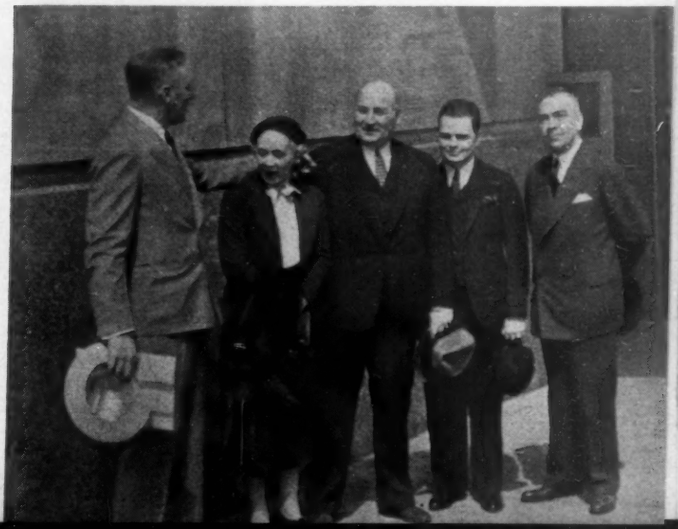
EVERYBODY Smile: JAMES SATTERWHITE, Westcott & Greis, Inc., Tulsa; W. T. RASCH, American Gas Products, Inc., N. Y.; JOHN C. DIEHL, American Meter Co., N. Y.; WALTER REID, Southern Union Gas Co., Dallas; ROBERT W. HENDEE, Colorado Interstate Gas Co., Colorado Springs.

Meter Manufacturers: C. R. ZESKEY, COL. W. F. ROCKWELL, and W. A. WOOD, Pittsburgh Equitable Meter Co., Pittsburgh, Pa.



A FEMININE EXECUTIVE: Mrs. W. E. MILNE, manager, Gainsville Gas Co., Gainsville, Texas, discusses a point with HORACE J. SMITH, president of Ward Heater Co., Los Angeles.

CHERCHEZ La Femme: HOWARD PAPE, Crane Co., sales manager; Mrs. JACK REINBOLD, JACK REINBOLD, general superintendent, and SAM TAYLOR, purchasing agent, Panhandle Eastern Pipe Line Co., Kansas City; and C. C. JOYS, sales manager, A. O. Smith Corp., Milwaukee.

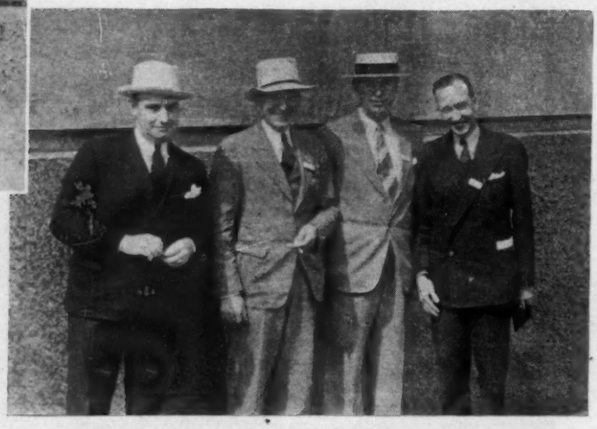


GAS CAMERA GOES

TALKING ABOUT home and the range: FRANK HOENIGMANN, Cribben & Sexton Co.; W. L. HUTCHESON, Manufacturers Light and Heat Co.; G. H. SCHLATTER, Laclede Gas Light Co.; JESSIE McQUEEN, American Gas Association; H. F. PATTERSON, and PAUL J. DORSEY, Cribben & Sexton.

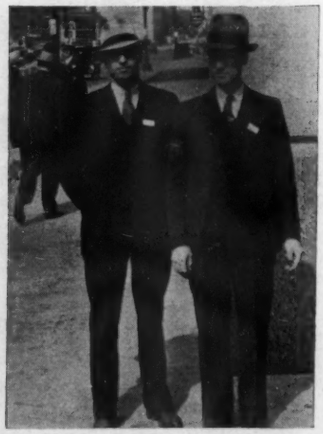
FROM LEFT to right and going up are C. M. FLEMING, I. D. FRANTZ, and R. D. MILLER, all of Hope Natural Gas Co.

LOOKING for a fourth: H. T. RYAN, sales manager; G. A. BOWMAN, sales engineer, and C. W. LEWIS, Robertshaw Thermostat Co., Youngwood, Pa.



JOE W. BROWN, Lone Star Gas Co.; BERT FISHER, Payne Furnace and Supply Co., Houston; C. B. WILSON, Arkansas Louisiana Gas Co., Little Rock; and CRAIG ESPY, GA S , Chicago.

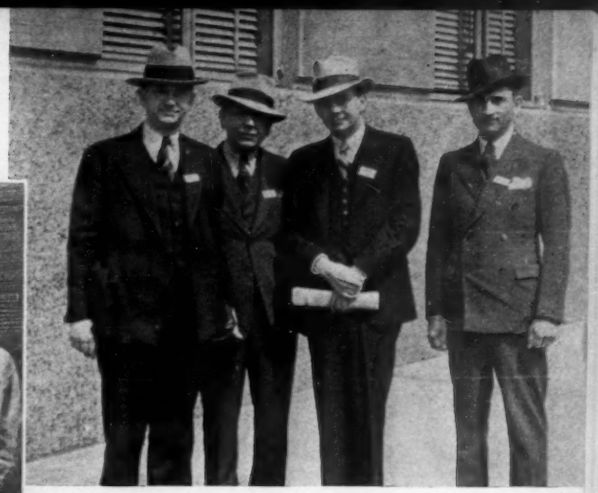
FRED McMURRAY, M. B. Skinner Co., South Bend, Ind.; E. G. HAMMERSCHMIDT, Texoma Natural Gas Co., Fritch, Texas.



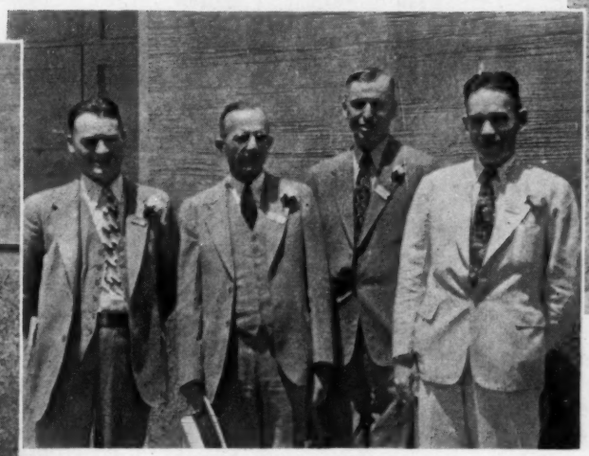
SEVEN privates and a general: THOS. E. BULLION, Detroit-Michigan Stove Co.; C. H. ZACHRY and L. L. BAXTER, Southern Union Gas Co.; W. H. SINKE, Central Power Co., Grand Island, Neb.; R. J. CANIFF, Ruud Manufacturing Co.; H. P. CARROLL, United Gas Public Service Co.; WILLARD G. WIEGEL, Lone Star Gas Co.; F. C. ARMBRUSTER, Middlewest Service Corp.

OHIO men: F. T. RAINEY, Ohio Fuel Gas Co., Columbus; C. W. GARDNER, East Ohio Gas Co., North Olstead.

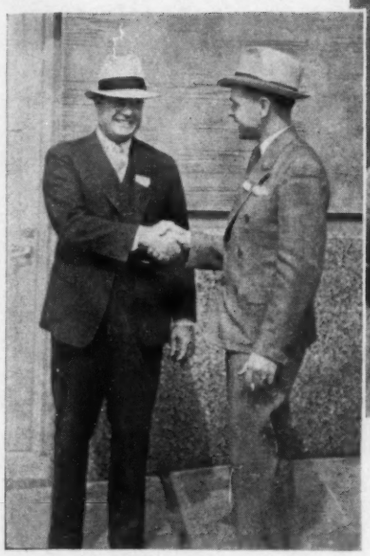
TO KANSAS CITY



FOUR of a kind: HENRY S. JONES, R. S. DIGGS, W. H. McINNIS, and L. H. HUNGATE, Jr., Memphis Natural Gas Co., Memphis, Tenn.

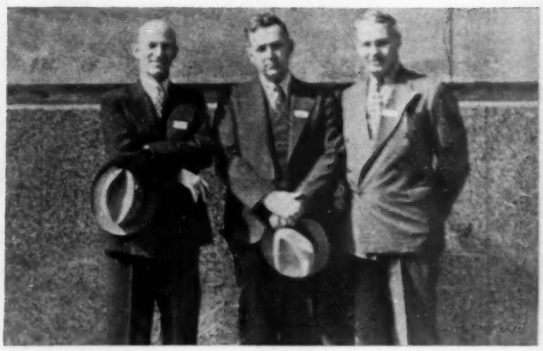


REGULATOR Fellows: FLOYD GAUNT, R. C. HUGHES, and BLANCHARD SMITH, of Reynolds Gas Regulator Co.; and ROBERT J. KUHN, consulting engineer, New Orleans.



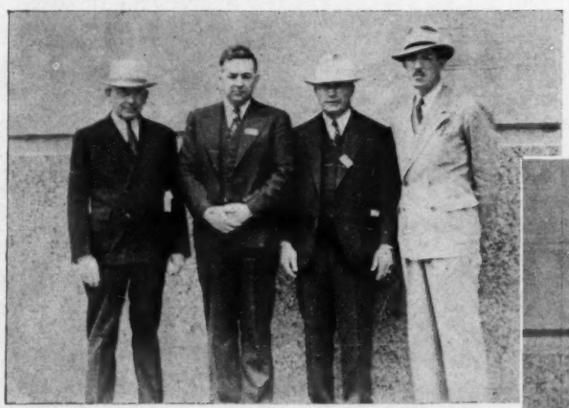
HANDSHAKE: H. F. PREDDY, Community Natural Gas Co., Dallas, greets R. S. MOSHER, Condensation Engineering Corp., Chicago.

TWO FROM Texas: SAM GAMBLE, C. F. WILSON, Lone Star Gas Co., Dallas.



WESTERNERS: CLYDE POTTER, Southern Counties Gas Co., Los Angeles; C. K. PATTON, Dallas Gas Co.; A. S. KINCAID, Ward Heater Co., Dallas.

R. G. SOPER and C. K. PATTON, Dallas Gas Co.; H. C. HOLDER, Council Bluffs Gas Co., Council Bluffs, Iowa; and O. A. KINZER of Dallas Gas Co.



MIDDLEWESTERNERS: ED MARSH, The Moore Corp., Joliet; R. M. SCROGGINS, Arkansas Louisiana Gas Co., Shreveport; H. J. CARSON, Northern Natural Gas Co., Omaha.

matches between a number of contenders for local titles. Vaudeville and refreshments closed the entertainment. The annual banquet held on Wednesday evening in the Arena of the Municipal Auditorium was well attended and featured an excellent floor show.

Ladies' entertainment consisted of a motor tour of the city and visits to the William Rockhill Nelson Gallery of Art and the Kansas City Art Institute on Tuesday afternoon and a bridge luncheon on Wednesday. Mrs. B. C. Adams, wife of the vice-president and general manager of the Gas Service Co., Kansas City, was chairman of the ladies' entertainment committee.

Robert W. Hendee presided over Wednesday morning's general session which opened with Report of Supply Men's Fund Committee by George E. Welker, chairman. He was followed by J. T. Russell of Panhandle Eastern Pipeline Co. on "The Use of Anhydrous Ammonia to Inhibit Gas Hydrate Formation." (See page 38.)

Next, Major T. J. Strickler delivered "Future Plans for the National Advertising Program." He stretched out five sheets, each about 18 inches wide and reaching across the length of the stage, on which were pasted on both sides clippings of free newspaper and magazine publicity which has been published since the beginning of the national advertising program. He pointed out that editors have awakened to the fact that gas *is* news, and offered his exhibit as evidence, stressing the importance of cooperation with newspapers and national magazines in the preparation of publicity material.

Frank L. Chase of Lone Star Gas Co. then took the platform for an unannounced talk in which he urged that a committee be formed for the purpose of raising funds with which the Bureau of Mines might carry on repressuring research and an educational program among oil producers in the matter of repressuring and conservation. The session closed with "Natural Gas Extension Courses" by Professor C. M. Young of University of Kansas.

Production and Utilization

The Natural Gas Production committee and the Natural Gas Utilization and Sales Promotion committee conducted parallel sessions on Wednesday afternoon. In Chairman B. M. Nowery's absence the Natural Gas Production committee meeting was conducted by E. L. Rawlins of United Gas Public Service Co. C. E. Reistle, Jr., of Humble Oil & Refining Co., contributed "Drilling Equipment Improvements and Changes," which was followed by discussion from the floor. S. W. Meals of Carnegie Natural Gas Co. delivered "Increasing the Flow from Small Producing Gas Wells" and this also was followed by discussion. Following "Prolongation of the Life of Gas Wells" (see page 35) by L. A. Farmer of Oklahoma Natural Gas Co., L. G. Rheinberger of Sinclair Prairie Oil Co. led an interesting discussion, with many delegates exchanging experiences and company practices.

Chairman C. E. Bennett of the Natural Gas Utilization and Sales Promotion committee, not being able to attend, the session was presided over by Hugh H. Cuthrell of the Brooklyn Union Gas Co. "Developments in Commercial and Domestic Air Conditioning" by L. A. Bickel of Dallas Gas Co. was the first paper on the program and was followed with a prepared discussion by Carl Dean of Oklahoma Natural Gas Co. S. B. Severson, Republic Light, Heat & Power Co., read "Employee Selling," which was supplemented with a discussion by Frank T. Rainey, Ohio Fuel Gas Co., and by J. G. Ames, Western United Gas & Electric Co. Mr. Cuthrell then called upon Herman Russell for remarks on this subject. "Make 'Em Ashamed" (see page 40), by W. C. Grant, was the title of the last paper of this session, and was also followed by discussion.

Women's Activities

Jessie McQueen of the American Gas Association presided over the Home Service Breakfast held at the Hotel Muehlbach at 8:30 Thursday morning. The Home Service delegates were greeted by Herman Russell, Alexander Forward and George E. Welker. Mildred R. Clark of Oklahoma Natural Gas Co. gave "Home Service Sells Natural Gas." This was followed by a symposium of two-minute speeches — "Gas Hospitality House," Mrs. Vera C. Ault, Public Service Co. of Colorado; "Home Demonstrations," Betty Boyle, The Gas Service Co.; "Our Special Attention to New Range Users," Mrs. Mary Louise Hurster, The Laclede Gas Light Co.; and "Amusing Interludes in Electrolux Promotion," Jane Tiffany Wagner, Servel, Inc. Last paper of the breakfast session was "A Sales Manager Views Home Calls," C. B. Wilson, Arkansas Louisiana Gas Co.

George E. Welker again presided over the general session of Thursday morning in which the first speaker was John H. Schalek, the Peoples Natural Gas Co., who as chairman of the Wrinkle committee gave a report on work done. J. C. Reinbold of Panhandle Eastern Pipeline Co. delivered "Maintaining High Efficiencies in Pipe Lines." This was followed by discussions by J. L. Foster, Lone Star Gas Co., and by J. W. Ferguson, Colorado Interstate Gas Co. At this point in the program Major Forward announced the appointment of E. Holley Poe as successor to Captain A. E. Higgins, outgoing secretary of the Natural Gas Department (see page 52).

"Sales Objectives — Domestic and Industrial," B. H. Gardner of Columbia Gas & Electric Corp., and "Gas-Reserve Problems Dealing With Availability of Natural Gas from Gas Reservoirs and Conservation of Gas in Its Occurrence With Oil," E. L. Rawlins, United Gas Public Service Co., were followed with a discussion by J. H. Dunn of Lone Star Gas Co. (Excerpts from Mr. Rawlins' paper appear on page 35.)

Parallel Sessions

Three parallel sessions were held on Thursday afternoon—Natural Gas Utilization and Sales Promotion committee, Natural Gas Transmission committee and Industrial Gas Conference committee.

In Chairman C. E. Bennett's absence, the Natural Gas Utilization and Sales Promotion committee was presided over by Floyd M. Rosenkrans, new business manager, the Gas Service Co. Lyle C. Harvey, the Bryant Heater Co., read "New Developments and Designs in Domestic Appliances Which Are Now Available." "Gas Refrigeration Sales Methods" by W. M. Jacobs, Southern California Gas Co., was read by E. J. Strickland of the same company in the author's absence, and was followed with a discussion by C. B. Wilson of Arkansas Louisiana Gas Co. "Water Heaters" by A. L. McKinstry, Cedar Rapids Gas Co., was illustrated with photographs of appliance salesmen, pointing out that they come from all walks of life and all professions. The session closed with "Promoting Gas House Heating" by Frank L. Adams, Public Service Co. of Colorado.

F. F. Doyle, of Pacific Gas & Electric Co., presided over the Natural Gas Transmission committee symposium. First paper was "Recent Developments in Gas Compression Machinery" by Charles Norton, S. R. Dresser Manufacturing Co., followed by discussions by H. T. Kerr, the

(Continued on Page 52)

A HUNDRED YEARS OF NATURAL GAS DISCOVERIES

By C. EMERY TROXEL
Assistant Professor of Economics
Wayne University, Detroit, Michigan

THE history of the natural gas industry is truly a story of death of developed gas-producing fields and birth of new fields to replace the exhausted ones.* For many years not natural gas, but its companion resource, oil, was sought; and this is true today in many fields. In fact, many — perhaps most—natural gas fields have been found by wild-catters searching for more oil. Frequently the exhaustion of gas pools has been hastened because the gas was and is wasted, particularly in recovering natural gasoline or manufacturing carbon-black. Similarly oil producers have not commonly conserved gas for which there has been no immediate, developed market.

C. E. TROXEL

Statistics showing comparative production and consumption of natural gas by states for the years 1910, 1920, and 1934 are presented in Table No. 1.

Early Discoveries

George Washington forever deeded to the public, in 1775, a "burning spring," which he discovered when he went to the Kanawha Valley to locate lands granted to him for military services. For some years the gas, which was discovered in the search for salt brine, was considered dangerous. And who would want salt water spoiled by oil? Several times during the winter of 1807-08 natural gas was found in the Kanawha Valley at a depth of only 15 or 20 feet; nearly every well sunk for salt water became a gas well. In 1815 natural gas was found within the present city limits of Charleston, W. Va., and, since the well produced gas, which caught afire, and not salt brine, the operators abandoned it as being dangerous. John Klingensmith was drilling for salt brine near Greensburg, Pennsylvania, in 1823 when so much natural gas was found that it became ignited and burned the cabin in which the workmen slept.

In 1821 at Fredonia, a western New York town, a shallow natural gas well was drilled in the bed of the village creek. Three years later a few residents of Fredonia were the first in the United States to use natural gas for illumination. From the well gas was conveyed to this gasometer through 25 feet of small lead pipe. Lead pipes to the buildings and tin tubes within buildings and homes carried the gas to the burner tips. The owners of the venture expected "to furnish gas lights at half the price of candles." "As no failure of the gas is ever anticipated, the works have been constructed to last for ages." LaFayette visited Fredonia to see its gas lights. Natural gas utilization and lights at Fredonia were declared the "eighth wonder of the world" (another suggestion for increasing the list) by an inspired commentator at the time. The editor of the Fredonia Censor challenged, "What village can compare with Fredonia?"

Eastern Natural Gas Fields

In 1840 one of the first natural gas wells in Pennsylvania was drilled near Newcastle. Gas was being utilized in Pittsburgh steel mills in the early 'seventies. In 1884 and 1885 intensive development of the Murraysville and Grapeville fields began. The productive Speechly gas sand of Pennsylvania, which has varied in thickness from 50 to 100 feet, was discovered in 1885 in Venango County at a depth of 1,900 feet. Samuel Speechly, the discoverer, had been seeking the Bradford oil sand. These deeper

TABLE NO. 1. NATURAL GAS PRODUCED AND DELIVERED TO CUSTOMERS BY STATES IN 1910, 1920 AND 1934*
(Per Cent of Total Production)

	1910 Pct.	1920 Pct.	1934 Pct.
Texas		4.64	34.05
California	.54	8.28	15.14
Oklahoma	9.90	19.36	14.37
Louisiana	1.59	7.31	12.74
West Virgina	37.46	30.00	6.16
Pennsylvania	24.92	15.77	4.87
Ohio	9.47	7.38	2.84
Kansas	11.66	2.65	2.64
Kentucky	.28	.42	1.87
Wyoming		1.29	1.31
New Mexico			1.36
Montana		.10	.84
Mississippi			.47
Arkansas		1.13	.39
New York	1.18	1.05	.35
Colorado			.15
Illinois	1.32	.38	.11
Indiana	1.13	.23	.10
Michigan			.15
Others	.55	.01	.06
	100.00	100.00	100.00
Total Sales — All States — (Trillions of Cubic Feet)	509	798	1,771

* Annual Reports of U. S. Bureau of Mines.

* The bulk of this material on the history of natural gas fields was obtained from the reports of the U. S. Bureau of Mines, periodicals devoted to the gas and oil industries, and other, but scattered, sources.

sands of Pennsylvania have produced continually large amounts of natural gas, although there has been a gradual decline of gas production in the state since 1890.

In northern Pennsylvania two gas fields have been developing since 1930. These are the Tioga and Potter fields. On September 15, 1930, the Allegheny Gas Co. completed a well in Tioga County which developed a "wild" gas flow that initially gaged between 80 and 100 million cu. ft. per day. For 16 days the well was out of control. Three years later the discovery well of the Ellisburg pool in Potter County was completed. These were the largest natural gas discoveries in Pennsylvania in many years—in a much prospected state they were remarkable gas discoveries.

Since the discovery of natural gas at Fredonia in 1821, several small gas fields have been discovered in western New York. In 1890 Allegheny County of western New York was the leading source of natural gas; some of this gas was piped to Buffalo. Since 1930 some drilling has been done in the Wayne-Dundee field in west-central New York. By the end of 1933 about 60 wells, some of which produce fairly large amounts of gas, had been completed in the Geneva field at the foot of Seneca Lake. The limits of the Tioga field of Pennsylvania appear to extend into New York with the completion of several prominent wells in Steuben County.

Throughout the Blue Ridge Mountains of the western half of West Virginia, natural gas and oil have been produced continually for the last 50 to 60 years. Eventually in the late 'eighties, after drilling many dry holes in an effort to locate deeper oil and gas sands, an important strike was made near the Pennsylvania line "and the boom was on." In 1894 the "Big Moses" gas well, one of the nation's historic gas discoveries, was drilled in the northern part of the state. This well developed a daily open-flow capacity of 100 million cu. ft., and the well consequently "blew open" for three or four years before it was capped. Subsequently, so many gas wells were completed in West Virginia that the state in 1903 ranked next to Pennsylvania in the production of natural gas. In 1917 and 1918 there was evident for the first time a shortage of natural gas in the state. Recently more drilling has been done in the southern part of West Virginia where it is believed that "many drilling opportunities exist."

Natural gas was discovered near East Liverpool, Ohio as early as 1859, when borings were being made for salt water; these eastern Ohio fields are usually considered a part of the Appalachian oil and gas fields. The Central Ohio gas field, which extended 100 miles or more southward from Cleveland, was developed between approximately 1885 and 1910. Gradually, despite occasional discoveries of new fields, the gas production of this area has declined.

Following the discovery of gas in 1848 by a northwestern Ohio farmer who believed the "devil had a finger in the pie," Dr. Oesterlin, a young German physician of Findlay, declared that the town was "over a vast caldron of gas." Thirty-five years later, through the continual efforts of Oesterlin to enlist capital for well-drilling, a large gas well was drilled at Findlay. The discovery of the "great Karg well" and the Van Buren well, which were brought in during 1886, encouraged continued drilling during the remainder of the nineteenth century in northwestern Ohio gas fields.

In November, 1886, the first Kokomo, Ind., gas well "came in at 916 feet with a daily open flow of 6,000,000 cu. ft." The Kokomo discoveries resulted in much excitement. In surrounding towns natural gas companies were organized "until at the close of 1886 there was hardly a place of any importance at which there was even the remotest possibility of obtaining gas that had not effected an organization for prospecting for gas or oil." By the end of 1887, 59 Indiana towns had from one to 16 gas wells each. So wasteful was the operation and drilling of gas in Indiana, as in Ohio, that the production of gas in the state began dwindling in the early part of the twentieth century. By 1908 many of the wells were being returned to the farmers from whom the land had been leased. Today only a relatively small quantity of gas is produced by Indiana gas wells, although in the last five years a fair sized field, the Oakland, in southwestern Indiana has been developed.

At the beginning of this century the leading gas fields of Kentucky were located in the eastern and northeastern sections of the state. The Menifee field was a prominent source of gas in 1900. Recently there has been extensive gas well drilling in the Blue Ridge Mountains of Kentucky; a pipe line carries gas from Warco, Ky., to Washington and Philadelphia. Western Kentucky fields have been producing gas since 1900; important recent discoveries have been made in Hart County.

Some gas was found near Litchfield, Sparta, and Pittsfield, Illinois, in the 'eighties, but Illinois' principal gas production period began when the oil fields in the southeast were opened in 1905 and 1906. Among the six existing small gas producing pools in Michigan, i. e., Broomfield, Vernon, Muskegon, Mecosta, Clare and Elba, the Mecosta field seems to be the most significant.

Southwestern Fields

Earlier oil fields, as well as present ones, of the Mid-Continent and Gulf Coast regions have produced or are producing large amounts of gas. An insane drive to recover only oil coupled with the distance of these fields to large fuel markets for gas have been impediments to a proper utilization of the gas supply of these fields. Many of the famous Texas oil fields—Spindletop (1901), Sour Lake (1902), Humble (1904), Electra (1911), Burkburnett (1911) — produced considerable amounts of gas. Similarly, the Glenn, Cushing and Seminole fields of Oklahoma produced large quantities of gas; some of the oil wells of the Cushing field had a potential gas flow of as much as 25,000,000 cu. ft. per day. In 1916 most of the gas used in Oklahoma came from the Cushing field. Likewise, billions of cubic feet of gas were produced in the extraordinary Smackover and El Dorado oil fields of southern Arkansas, but scarcely any of this gas ever reached domestic and industrial consumers.

In 1900 apparently the only gas sold in Texas came from two pools near Corsicana. As late as 1908 there were only two small natural gas distributing companies in Texas—at Corsicana and Marshall. And the first significant supply of natural gas in Texas was found in 1907 at Petrolia in the North Central region; gas from this field was piped to Fort Worth in 1909.

Between 1910 and 1920 the principal source of gas in Texas was in the North Central part of the state, although the southeastern fields (Gulf Coast) yielded considerable quantities of gas. In 1935 the Lone Star Gas System began using gas from the Long Lake section of the East Texas oil field, but nearly all the gas recovered in this field has been wasted and from much of it even the natural gasoline has not been extracted. A 50,000,000 cu. ft. "gasser" was completed in the Refugio field of the Gulf Coast area—the White Point, Saxtet, Cole Bruni and Jim Hogg fields in

(Continued on Page 44)

FIG. 1. View showing blast equipment in the foreground and the new yard building in the background.

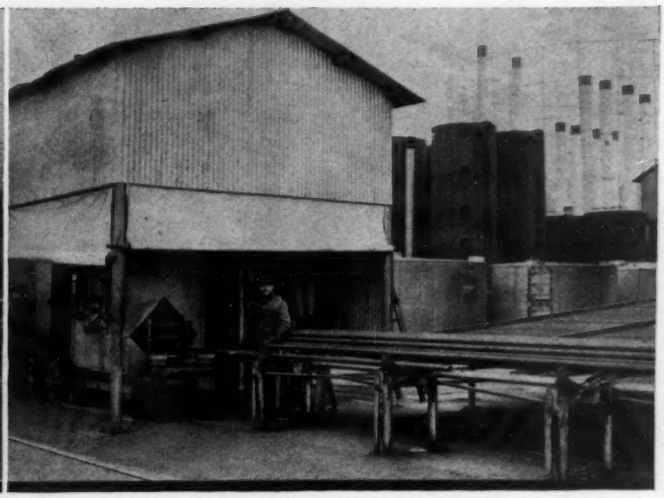


FIG. 2. Showing the feed end of the blast machine and a portion of the feed platform with ball transfer rolls.

PIPE TREATMENT IN THE SO. CALIF. GAS CO. YARD

● J. B. REDDICK, Southern California Gas Co., Los Angeles, Calif.; report of the Pipe Protection Sub-committee of the Transmission Committee, presented before the spring meeting of the Technical Section of the Pacific Coast Gas Association, Los Angeles, Calif., March 18-19, 1937.—(Abstract by G A S).

A STUDY preliminary to design of the pipe treatment yard showed that annual issues of pipe 8 inches or larger in diameter varied within wide limits, and that measured in lineal feet about 80 per cent of all pipe would be 1, 1¼ and 2 inches in diameter. The output of the blasting equipment would be the measure of the production, and should be measured in square feet of surface cleaned per time unit rather than lineal feet per time unit. On this square foot basis it was found that about 80 to 90 per cent of the pipe treated would be 6 inch or under. It was decided that if a maximum diameter of 16 inches could be handled by the sand blast machine all practical considerations would be met.

The accompanying photographs show portions of the yard. Fig. 1. is a view showing blast equipment in the foreground and the new yard building in the background. Fig. 2 shows the feed end of the blast machine and a portion of the feed platform with ball transfer rolls. Fig. 3 shows the discharge end of the paint booth, loading racks with air jacks and pipe carriage and runway. Fig. 4 is a close-up of a wrapping machine showing cellulose wrapper being applied.

The final development embraced the following major items:

Handling Pipe

The activities considered under this item were the unloading of pipe from railroad cars, moving bare pipe from storage piles to sand blast feed platform, handling large diameter pipe after passing through sand blast and paint machine, loading pipe onto trucks and miscellaneous yard work. A truck mounted type of crane was selected, with a 35 ft. boom and a capacity of 3,000 lbs., without outriggers, at a radius of 25 ft. A. P. & H. No. 100 unit was purchased and mounted on an old 10-ton, 6-wheel, Mack truck. This crane conveys pipe to the feed platform, from which it is moved into power drive of the blast machine.

This platform is 50 ft. long and 40 ft. wide. For all pipe rated at 20 ft. random lengths it is divided into two magazines. It is built on an incline so that pipe will roll down by gravity to pairs of rollers of the Mathews Ball transfer type spaced on 6½ ft. centers, along which the pipe is moved into the power drive. The substructure is of pipe supporting 45 lb. rails laid transversely, and it is upon them that the pipe rolls. The space between rails is planked, giving safe footing for men, the planks resting on the flanges of the rails but not being placed so as to extend above the ball.

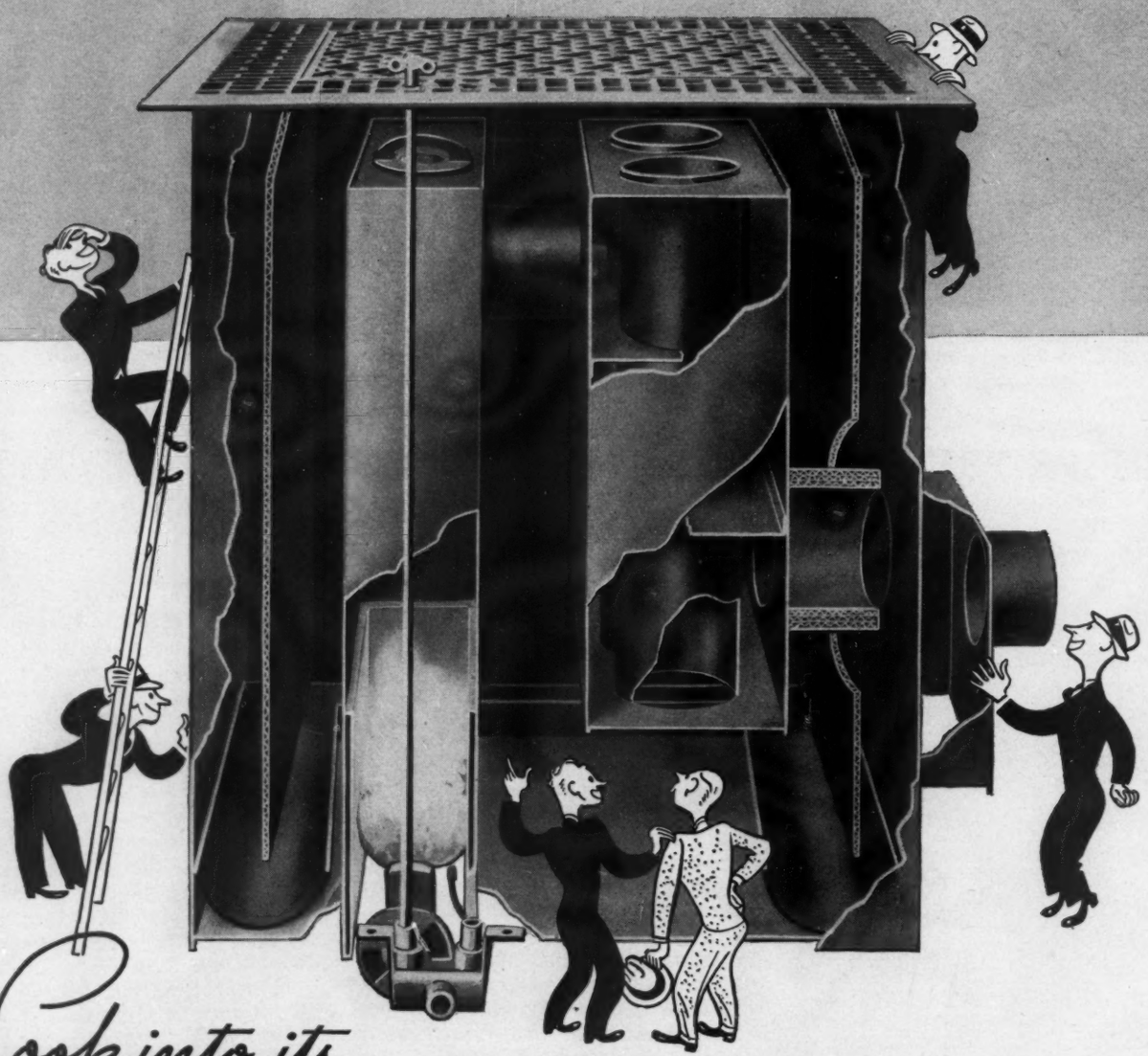
Mechanical Sand Blasting and Painting

Two types of blasting were studied; one was the conventional method using air, and the other the airless type called the Wheelabrator or Roto-blast wherein the abrasive gains its velocity by being thrown from the periphery of a rapidly rotating wheel. Undoubtedly the airless machine is cheaper to install and operate when balanced against adequate compressor equipment for the air type. Due to the fact that there was an ample surplus from a compressor already installed, having a capacity of 1,250 cu. ft. per minute at 125 lbs. pressure, the airless machine was not considered.

Pangborn equipment was installed and included the following items: one automatic, continuous operating, blast cleaning hose machine complete; one belt bucket abrasive elevator; one abrasive separator and storage bin; one blast cabinet complete with a six nozzle battery; and one dust collector. The company furnished one 5-hp. and two 1-hp. motors.

The blast was guaranteed to clean new pipe at a rate of not less than 16 sq. ft. per minute. For the first four months since operations began on October 2, 1936, the average rate of cleaning has been 22 sq. ft. per minute. The abrasive used is No. 50 steel grit and the operating pressure 80 lbs. per sq. in. Allowing 70 per cent lost time and assuming 8-hour shifts for 300 working days, the

LOOK into the



Look into its

SOUND CONSTRUCTION AND METHOD OF OPERATION

In the picture above you look directly into a "cutaway view" of a WARD FLOOR FURNACE. This shows the sturdy, durable construction that makes these furnaces *permanent* load-builders.

All materials that go into construction of Ward Furnaces are the best that can be obtained. The entire furnace is assembled as a compact unit . . . a "complete package" . . . of heavy gauge, rust-resisting Toncan iron, bound in asbestos. All accessories and controls are sturdily built in. No delicate parts to get out of order, nothing to wear out. Every Ward Furnace is guaranteed for 10 years . . . has a "life expectancy" equal to that of the house into which it is installed.

Ward's principle of operation, perfected out of 28 years of heating experience, provides a steadily circulating volume of warm air, distributed rapidly through the room area and changed completely three to six times an hour.

Heat travels from the burner through the combustion chamber with direct flow diverted by scientifically placed baffle plates which insure full heating value from every cubic foot of gas burned. Air of the room is drawn in from floor level, through outer section of register, down to the Cradle Circulator at the bottom of the furnace where it is turned up against the warm sides of the heating element. It returns to the room through a removable center section of the register. Bilt-in Thermo-Control, an exclusive Ward development which is part of the furnace, contacts all of the air as it passes through and gives dependable control of temperature.

A Ward is simple, inexpensive to install. Simply drop the furnace into the floor opening . . . connect to vent and gas line, and it's ready to go to work. An experienced gas fitter can easily install a Ward Floor Furnace in less than a day.

WARD FLOOR FURNACES ARE A. G. A. APPROVED

WARD FLOOR FURNACE

Since 1909

Look into the Reasons why *more* Utilities will sell *more* of this popular Heating Equipment this Year than ever before . . .

It's a fact! More and more alert gas merchandisers are making an ally of the Ward Furnace. That's because Wards insure consumer satisfaction with gas as the most comfortable, economical, efficient fuel for heating.

More and more are utilities using this popular appliance to increase and *permanently* protect their load. That's because Wards are *permanent* equipment . . . built to last a lifetime. Once in, a Ward Furnace stays in, becoming an enduring part of the house in which it is installed.

More than 325,000 Wards in use today, under all sorts of climatic conditions, prove the popularity of this furnace . . . and prove that *you* can *profit* by adding Wards to the excellent line of appliances you sell.

Look into its Load-Building Possibilities

In the community you serve there are hundreds of places where a Ward Furnace will provide an ideal solution of the heating problem. There are hundreds of one-story homes, stores and office buildings where the installation of our product will insure the sale of your product for many years to come.

Don't neglect this huge, profitable market. Look into the load-building, profit-building possibilities of Wards at once. Write *now* for further facts so that you may be prepared for the heating season ahead.

Let us remind you . . . "Your load is as good as the appliance you sell. *Sell the best . . . sell Wards!*"

WARD HEATER COMPANY
Los Angeles, California

DID YOU LOOK IN ON ME IN KANSAS CITY?

If you were at the Kansas City Convention you no doubt saw this young lady in the Ward Floor Furnace exhibit and learned some interesting, valuable facts about the line of heating appliances she represents. If you weren't there, wouldn't it be a good idea to write to us now for complete details as to how Wards can be of service to you and to the consumers you serve?

Ward Representatives:

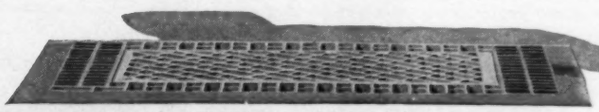
Chicago, Ill.
J. E. Davies, Peoples Gas Building

Dallas, Texas
A. S. Kincaid, 2012 N. Harwood Ave.

San Francisco, Calif.
F. E. Reilly, 200 Davis Street

Pittsburgh, Pa.
H. C. Sanderson, 207 Fulton Bldg.

Kansas City, Mo.
J. H. Stubbins, 300 E. 68th Terrace



Register at floor level is all you see→

equipment has a capacity of 7,400 sq. ft. per day which is approximately equal to an annual output of 3,700,000 lin. ft. of 1 to 6 inch pipe.

Within the cleaning limits of the battery of nozzles, the speed of production is entirely governed by the forward speed that can be attained with the mechanism which drives and rotates the pipe through the blast cabinet. This power drive was designed and built by a Los Angeles firm along the lines specified by the company's engineers.

A set of rolls is mounted on each side of the cabinet with mono control which can be cut to any desired helix, and they are driven by a 1-hp. variable speed motor through a connecting shaft and gears. This makes possible an almost infinite number of speed and rotating combinations within practical limits. Therefore, regardless of whether the pipe is fairly clean or quite dirty, the flexibility of the power drive makes maximum production possible for any particular character of pipe.

The paint cabinet was designed and built by the company. It is equipped with a Binks spray gun, and paint is drawn from a 25-gallon pressure tank equipped with an agitator. In the line leading from the tank to the spray gun two screens have been installed. When one clogs, the paint stream is bypassed through the other, thus eliminating any shutdowns while a screen is being cleaned.

As pipe is fed into the blast the lengths are joined by connectors which can easily be inserted and removed. This makes a continuous line passing through the blast and paint machine. The free end emerging from the paint booth is supported at the proper level by a small carriage which is thrust back by the advancing pipe along an elevated track constructed of angle iron. This tramway is built on a slight incline to facilitate the return of the carriage to the receiving position.

After a length has passed through the paint booth it is lifted to a rack made up of a pair of bolsters freely supported by two pairs of air jacks. When the rack is loaded a specially designed hand car is moved beneath it. By the operation of a valve the jacks lower the rack onto the car which is moved out, and a second setup is made with a second pair of bolsters. This rack is loaded while the car is being unloaded and the operation repeated. The timing of these batches is such that the operation of the blast and paint machine is continuous.

The pipe carriage and runway, hand car, air jacks and bolster were designed and installed by the company.

It is quite essential that all free water be removed from the compressed air before entering the blast machine. To accomplish this, the air circulates through a two-pass Griscom-Russell cooling section installed in one of the cooling towers in order to reduce its temperature. The free water is then extracted at the blast machine by a down-flow cone type drip.

Systematized Piling

Piling for bare, painted and wrapped pipe has been so arranged as to provide as little unnecessary movement in handling as possible. Incoming pipe is piled in the bare pipe area. The crane can work effectively on piles built up to 10 ft. in height. For this reason reinforced concrete slabs are used instead of stringers or "lay-downs" in order to obtain a more uniform distribution of pressures on the underlying soil. The storage capacity on these slabs is approximately 1,250,000 lin. ft.

Bare pipe is piled two layers to the tier. Each tier is divided into sections containing enough lengths to make up about 2,500 lbs., or one crane load. This piling is done only on pipe up to and including 4-inch diameter and on 6-inch pipe, when in 20-ft. random lengths.

The bases for painted and wrapped pipe piles are reinforced concrete stringers. Conventional piling is used in these areas and the height is limited to 5 ft. except where large diameter painted pipe may be piled by the crane. The painted pipe area has a total storage capacity of approximately 1,000,000 lin. ft. of pipe 6 inches in diameter and under, while the wrapped pipe area will store about 850,000 lin. ft.

Pipe wrapping is done by two machines which have been in use for several years. The maximum diameter which can be handled is 8 inches. Production varies per machine from 800 ft. of 1-inch pipe to 200 ft. of 6-inch pipe per hour. The efficiency of these machines has not been increased over previous practice with the exception that when wrapping 3-inch pipe or larger the use of a preheating kettle for the asphalt has proven very advantageous. However, the general overall operating efficiency has been improved due to confining all operations in a given area all of which is paved, and reducing to a minimum all necessary movement.

All main drives and runways were paved with asphaltic concrete. With

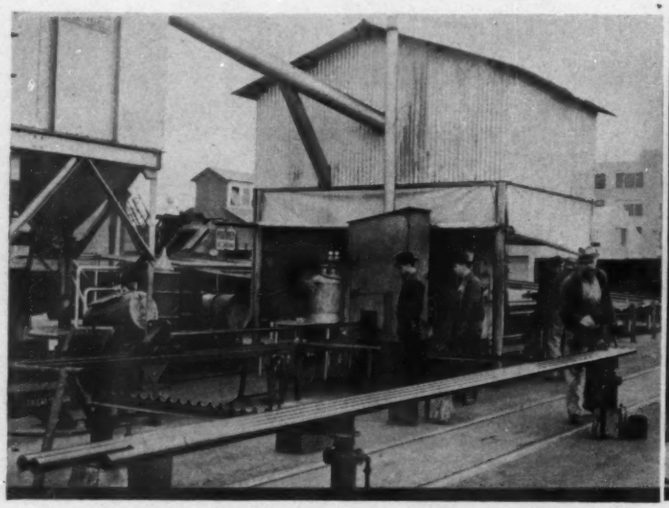


FIG. 3. Showing the discharge end of the paint booth, loading racks with air jacks and pipe carriage and runway.

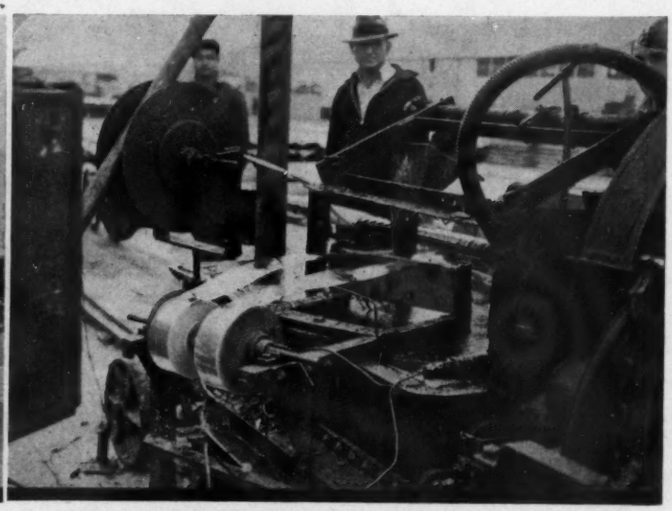
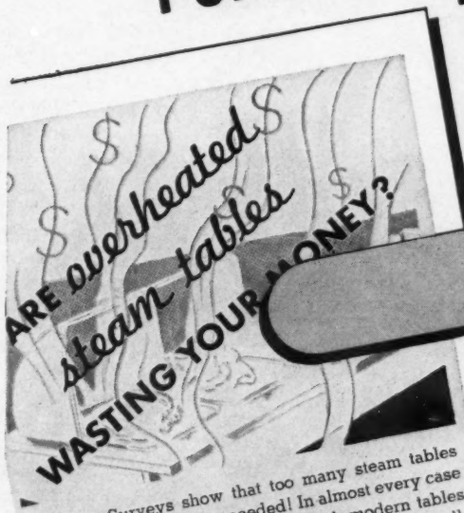


FIG. 4. Close-up of a wrapping machine showing the process of applying the cellulose wrapper.

POINTING OUT TO YOUR CUSTOMERS that wasted heat means wasted $$



Surveys show that too many steam tables consume more fuel than needed! In almost every case savings were made by replacing with modern tables equipped with Robertshaw thermostats—or by installing thermostats on the tables in use.

Cut your costs WITH
ROBERTSHAW STEAM TABLE THERMOSTATS

Stop the waste that's going on at your steam tables! Check up and see how Robertshaw thermostats will cut fuel bills. Your gas company or equipment dealer will gladly make the survey.

Robertshaw-equipped steam tables actually save their cost in fuel reduction alone! That's the experience others have had. That's the experience you will have. In addition they prevent overcooking; loss of flavor; food spoilage.

Every day you delay means money out of your pocket. Ask your gas company or equipment dealer today.

ROBERTSHAW THERMOSTAT CO.
YOUNGWOOD, PA.

ROBERTSHAW STEAM TABLE THERMOSTATS

Cost So Little—Save So Much
FOR STEAM HEATED AND GAS FIRED STEAM

"Stop that waste of heat!" That's the warning that Robertshaw advertising flashes to your customers. *"Stop it with Robertshaw thermostats"* is the advice it gives. *"Have an equipment survey made in your kitchen"* is the action it urges—over and over again.

Install steam tables equipped with Robertshaw thermostats or convert those in use with Robertshaw controls available for that purpose.

The savings made by such installations have often resulted in sales of additional new equipment. In many cases complete kitchen modernization has eventually followed.

ROBERTSHAW THERMOSTAT COMPANY
Youngwood, Penna.

Your customers see heat going to waste over their tables. They see it again in the Robertshaw advertising. They see that Robertshaw steam table thermostats will stop that waste. Cash in on this strong promotional campaign. It's running now in your customers' trade papers.

ROBERTSHAW steam table THERMOSTATS

Cost so little—save so much!

TABLE NO. 1. MAN HOURS PER 100 LIN. FT. OF PIPE BLASTED AND PAINTED

Pipe Dia.	Old System	New System			
		Oct.	Nov.	Dec. 1936	Jan. 1937
1"	.454	.638	.515	.437	.568
1¼"	.629	.632	...	...	...
2"	.778	.790	.540	.513	.572
3"	1.140	.978	...	.663	.695
4"	1.456	...	1.038	1.007	1.140
6"	2.315	3.160	1.920	1.228	...

the exception of the crane runway they are of the inverted type with 2-ft. concrete gutters at the center, thus eliminating curbs or side drains. The topography of the yard is quite flat and considerable study was required to develop a plan which would successfully dispose of storm waters. Up to the present time the drainage system has operated quite satisfactorily.

Not only was a new yard office and locker room necessary for the yard men but it was thought desirable to store all materials required in yard activities in this building.

Operating Data

In presenting these operating data attention is called to the fact that the blast machine has been in production only four and one-half months. Of this time the first six weeks are not representative for the reason that a crew had to be organized, an extra operator broken in, minor adjustments and changes made, and there was more or less interference due to unfinished construction. In January the efficiency fell off slightly on account of unfavorable weather conditions. Nevertheless, the following data will be indicative of what may be expected from the equipment.

Total lin. ft. of pipe blasted	910,392
Total sq. ft. of pipe blasted	535,636
Total elapsed time in hours	677
Sq. ft. blasted per lb. of steel grit	84
Average life of 1 C. I. nozzle in hours	9⅓
Paint coverage sq. ft. per gal.	450
Man hours of crew	6,207

A comparison of labor for production under the two systems will no doubt be of interest. Details are furnished in Table No. 1.

No attempt will be made at this time to evaluate the cost of compressed air, electric current used or maintenance. It is thought that due to the short period covered by operations, any such costs might be misleading.

Conclusions

From the above data a gain over the old system, in labor alone, of about 30 per cent, can be confidently predicted. It is known that other savings will accrue but their magnitude would be a mere guess at this time. However, a total of close to 50 per cent is anticipated.

At the present time a mechanical loading device which will take the pipe from the feed platform, and move it onto the ball transfer rolls, is being fabricated in the company shops. It will be air operated and will save the labor of at least one man when handling the heavier pipe.

THE GAS ENGINE OF TODAY

● **B. C. THIEL, engineer, The Cooper-Bessemer Corp., Mt. Vernon, Ohio; addressing Natural Gas Department Convention, American Gas Association, Kansas City, Mo., May 10-14, 1937.—(Abstract by G A S).**

SINCE the first gas engine was built many improvements have been made upon it, both in its structure and materials used in manufacture.

The recent dust storms in the states west of the Mississippi have brought about the problem of completely enclosing practically all of the moving parts of engines.

The vertical units are completely dust-proof, only the main shaft extending out of the engine housing. All other moving parts are enclosed in metal hoods or covers that are bolted down on gaskets, which seal the entire working parts against dust. The main shaft is sealed with an oil seal ring making the bearing through which it protrudes dust proof. On these units the free air intake line should be equipped with an air filter. This is also true of the crankcase breather pipe.

On the later improved large horizontal units the entire unit is dust-proof with the exception of the valve rocker arms and bearings. The main frame, distance piece and tail guide are covered with sheet steel hoods having large sliding inspection doors. The cam cases are sealed by a leather accordion type seal that is attached to the case and to the valve push rod. The main bearing is sealed by a close-fitting oil thrower ring in the main bearing cover plate.

In the later types of units the flow of the cooling water is directed first to those portions of the engine that require it most. This is done by means of baffles and tubes cast in the water jackets of the cylinders and cylinder heads. The advantage in this method of cooling is that it does away with all pockets or dead spots.

In many of the newer units provision has been made for recirculating part of the outgoing cooling water. The advantage of this type of operation is that it relieves the cylinder and liner of the excessive temperature differences generally found between that end of the cylinder where the water enters and that end where the water is discharged. By keeping both ends of the cylinder more nearly at the same temperature the heat stresses set up by a large temperature difference are removed, and a smoother operating engine results. In engines operating on coke oven gas, refinery gas, or any gas containing an appreciable amount of sulphur, it is almost imperative that the temperature of the cooling water be carried as high as practicable. If the proper lubricating oil is used crank case temperatures of 160° to 175° F. are not excessive and lubricating oil temperatures of 150° F. are considered safe.

The oil consumption of the larger double-acting units has always been within reason, due to the fact that the cylinder lubrication is controlled by mechanical force feed lubricators separate from the general lubricating system, but in the vertical units the main lubricating oil pump furnishes the bearings and the oil thrown onto the cylinder walls. Then, too, there is always a certain amount of oil mist in the crank case produced by the oil thrown off of the cranks, some of which settles on the cylinder walls. In order to prevent an excessive amount of oil from working up along the cylinder walls and carbonizing in

● Some time ago, you sold and installed for her a new range — or it may have been some other gas appliance. Now, she is on the phone. Does her voice sing with pleasure and satisfaction — or is it a cold and frosty prelude to another complaint?

We agree with you, Mr. Gas Man — you receive many complaints that really are not your fault. But the purchaser bought from you — and back to you comes either satisfaction that builds good-will and business — or dissatisfaction that helps no one.

Here's a friendly suggestion — you might eliminate some of your complaints about the quality of the porcelain enameled parts — by suggesting to the appliance manufacturer that he use Toncan Iron Enameling Stock as the base metal. It is specially processed for one purpose — to take and hold porcelain enamel.

Republic Steel
Corporation
GENERAL OFFICES . . . CLEVELAND, OHIO

REPUBLIC STEEL
REG. U.S. PAT. OFF.
TONCAN
IRON
ENAMELING STOCK

Detroit-Michigan Stove Co., Detroit, Mich., take no chances with the quality of the porcelain enameled parts of their gas ranges — they use Toncan Iron Enameling Stock.

PAVING THE WAY TO

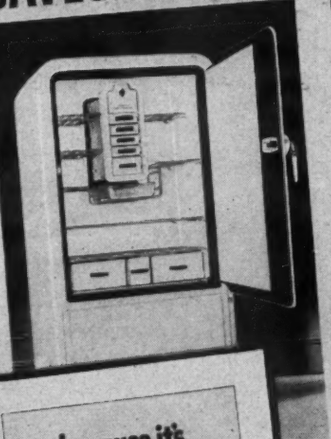
1 FROM HOLLYWOOD TO BORNEO

ITS SILENCE SAVES MONEY!

SERVEL ELECTROLUX

owners acclaim the thrifty, dependable performance of this modern refrigerator whose freezing system

HAS NO MOVING PARTS

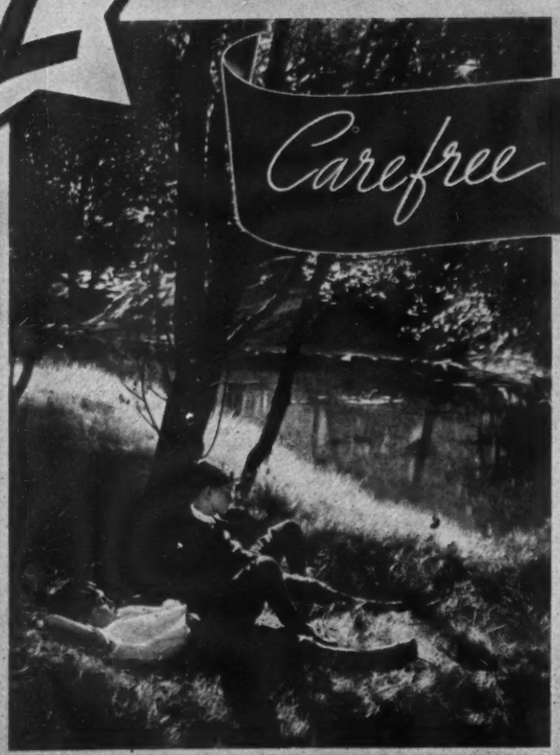


3 YOU'LL SAVE MORE MONEY

because it's silent, different freezing system HAS NO MOVING PARTS

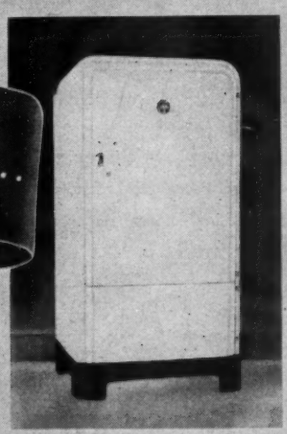
WITH A SERVEL ELECTROLUX

2



Carefree

silence...



SERVEL ELECTROLUX
IS SILENT AND CAREFREE
BECAUSE ITS FREEZING SYSTEM
HAS NO MOVING PARTS

Start now to enjoy its matchless benefits . . . its lasting savings

SERVEL ELECTROLUX
THE *Gas* REFRIGERATOR

NEW SALES PEAKS!

THIS MONTH, SERVEL ELECTROLUX ADVERTISING WILL REACH MORE THAN 23,000,000 PEOPLE . . . will win new prospects for GAS AND GAS REFRIGERATION

GAS REFRIGERATION SALES ARE BOOMING!

In the first few months of this year, all previous Servel Electrolux records have been smashed. For example, in April, 10,620 gas refrigerators were sold in Greater New York alone. Similar stories of success pour in from every section of the country.

Servel Electrolux is supporting you with the biggest promotion campaign ever run on a gas appliance. Magazine advertising is reaching more than 23,000,000 people a month. Radio's greatest dramatic show—"The March of Time"—is reaching more millions every week.

1937 is a gas refrigeration year! Are you on the bandwagon? Are you following these fundamental steps to peak business? **(1)** Display new Servel Electrolux models prominently in your window and on the floor of your showroom. **(2)** Tie in with the magazine campaigns by advertising in your local papers. **(3)** Send out literature about this different refrigerator. **(4)** Use poster displays on your local highways. **(5)** Utilize the backs of gas bills for "reminder" advertisements.

Servel, Inc., Servel Electrolux Refrigerator, Sales Division, Evansville, Indiana.

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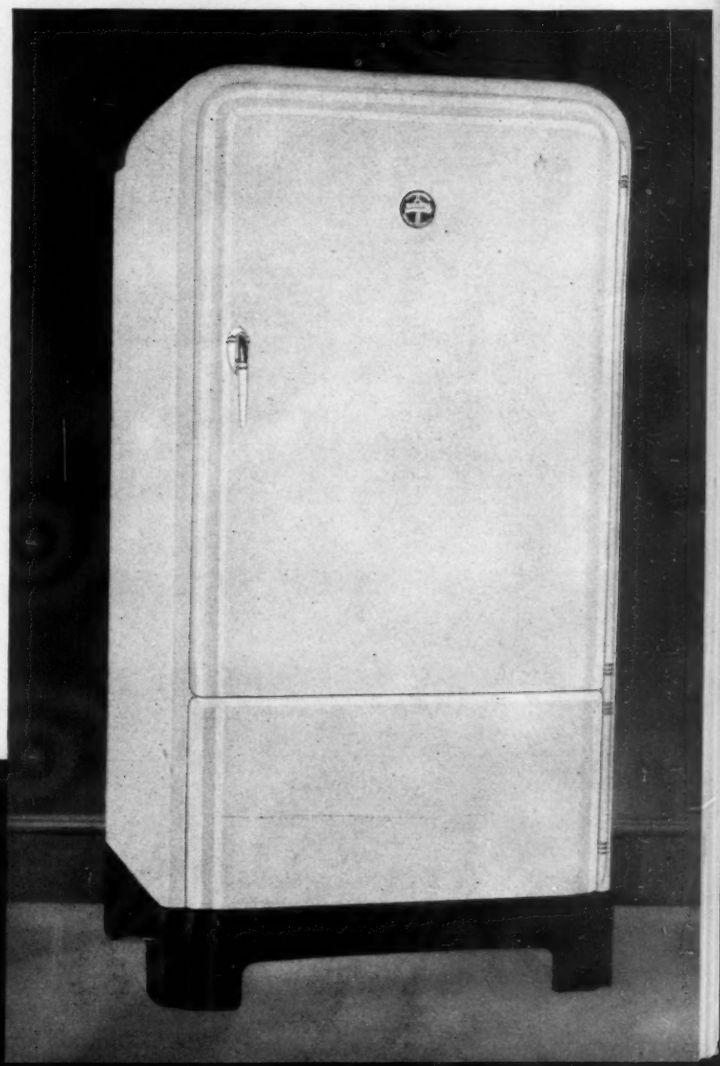
1 **"FROM HOLLYWOOD TO BORNEO, ITS SILENCE SAVES MONEY"**—arresting headline, interesting pictures, and straightforward copy characterize this advertisement in Servel Electrolux's tabloid series. This will reach a total of 13,458,679 readers during June, running in "Collier's," "Liberty," "Good Housekeeping," "True Story," "American Magazine," "Better Homes and Gardens" and "American Home."

2 Another in the series of attractive institutional advertisements, carrying the headline: **"CAREFREE SILENCE."** This will run in June as a two-page spread in "The Saturday Evening Post," and as a single page in "Time," reaching 3,584,994 readers altogether. Like its predecessors, this advertisement combines striking illustration, terse copy and impressive testimonials.

3 In June, the Servel Electrolux advertisement in "American Weekly" will be a full-page, four-color smash, with the powerful headline: **"YOU'LL SAVE MORE MONEY WITH A SERVEL ELECTROLUX."** Hard-hitting, aggressive in treatment, this dramatic advertisement will drive home to 6,000,000 readers the benefits of gas refrigeration and will capitalize the interest created by the editorial-type advertisements that have preceded it in this publication.

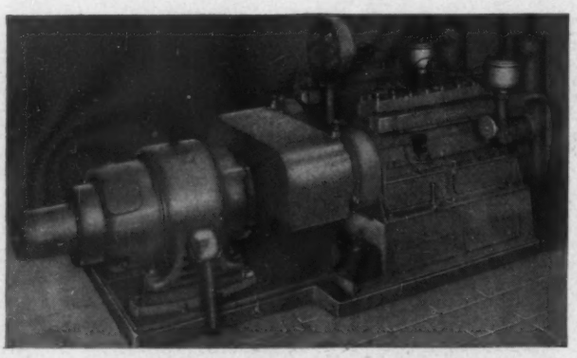


SERVEL ELECTROLUX

THE *Gas* REFRIGERATOR

"LYCOMING NATURAL GAS ENGINES *Increase your market for Gas*"

"All these businesses and many more will be better customers for gas than ever before. You can now sell them natural gas to make their own electric light and power!"



SELL more gas—the year round. Increase natural gas sales in industries scarcely touched now. Get a bigger share of industry's power dollar—with Lycoming Natural Gas Engine Generating Units and Natural Gas Engines for the *replacement of purchased electric power!* Lycoming Natural Gas engine **GENERATING UNITS** make electric current for less than one-half what it costs to buy it. Always on the job—24 hours a day. No standby necessary with the dual engine generating unit. If direct power to the load is desired, then **LYCOMING NATURAL GAS ENGINES** may be used to replace electric motors of from 10 to 50 h.p. at a fraction of the operating cost. Lycoming Natural Gas engine generating units and Natural Gas engines are clean, quiet, vibrationless and cool—engineered for 100,000 hours of dependable duty.

For complete information write:

LYCOMING MANUFACTURING COMPANY
Los Angeles Office and Warehouse, 3443 Wilshire Blvd., Phone Fitzroy 3122-3
Dallas Branch Office, 3600 Commerce St., Tulsa; Moorlane Company
Home Office, Works and Foundries, Williamsport, Pennsylvania
QUALITY ENGINE BUILDERS FOR 30 YEARS

the piston ring grooves, thereby sticking the rings in their grooves, oil scraper rings are used to scrape the excess oil from the cylinder walls and return it to the crank case. This method of lubricating oil control is very effective and has decreased the oil consumption until it is on a par with the smaller horizontal engines. When the design of an engine is such that the piston is shorter than usual and the space required for the standard oil scraper rings cannot be had, a special combination compression and oil scraper ring is used that in some cases has brought the oil consumption down as low as 8,000 B hp. hours per gallon of lubricating oil.

A recent innovation in vertical engines has been the tin-plating of the pistons. This permits fitting the pistons closer to the cylinder bore and reduces the usual piston slap to a minimum and at the same time guards against piston seizure.

The materials that are used in the manufacture of gas engines are constantly changing. One of the great strides forward has been the use of the refined cast iron known as Meehanite. This process leaves the chemical constituents of iron the same as the standard gray iron, but rearranges the graphite carbon in the iron in such a manner so that there are no large flakes or plates of graphite between the grains of iron and leaves the resulting mass close-grained on the order of steel instead of loose-grained and porous like ordinary gray iron.

The exhaust valve stems are made of nickel chrome steel which resists the erosion and corrosion of the hot exhaust gases, and gives the exhaust valve stem an almost unlimited life. This, together with the new types of exhaust valve seats and heat-resisting head, make the exhaust valve assembly one of the most trouble-free parts of the engine where in times past it was the most troublesome.

The use of synthetic rubber for gaskets and grommets that come in contact with oil and for covering ignition wires has reduced the maintenance cost considerably and increased the length of service in these items.

■ ■

Southwestern G. & E. Names J. A. Petty as Division Head

J. A. Petty has been appointed manager of the newly created Mt. Pleasant, Texas, division of the Southwestern Gas & Electric Co., a territory which includes 21 communities. Mr. Petty has been local manager of the Mt. Pleasant office since 1929, and will continue in this position. He joined the company in 1919 as manager at Gilmer, and was transferred to Center in 1926.

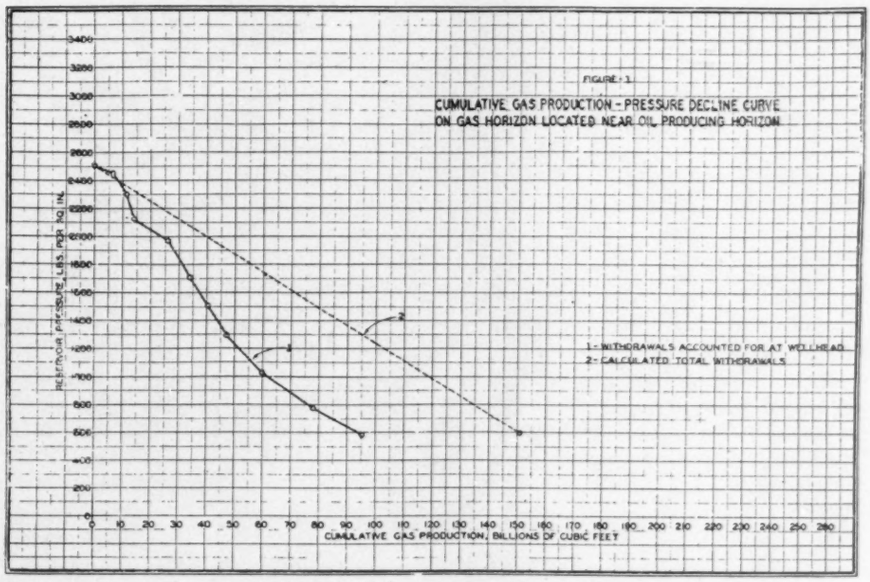


FIGURE 1
CUMULATIVE GAS PRODUCTION - PRESSURE DECLINE CURVE
ON GAS HORIZON LOCATED NEAR OIL PRODUCING HORIZON
1- WITHDRAWALS ACCOUNTED FOR AT WELLHEAD
2- CALCULATED TOTAL WITHDRAWALS
RESERVOIR PRESSURE, LBS. PER SQ. IN.
CUMULATIVE GAS PRODUCTION, BILLIONS OF CUBIC FEET

FIG. 1. Cumulative gas production—pressure decline curve on gas horizon located near oil producing horizon.

NATURAL GAS CONSERVATION

● **E. L. RAWLINS, engineer, United Gas Public Service Co., Houston, Texas, in a paper, "Gas-Reserve Problems Dealing with Availability of Natural Gas from Gas Reservoirs and Conservation of Gas in its Occurrence with Oil," and L. A. FARMER, general superintendent, Oklahoma Natural Gas Co., Tulsa, Okla., in a paper, "The Prolongation of the life of Gas Wells;" both papers being presented before the American Gas Association Natural Gas Department Convention, Kansas City, Mo., May 10-14, 1937. —(Abstract by G A S).**

AVAILABILITY of gas from natural-gas reservoirs is of primary importance in the commercial operation of gas fields. This has been borne out during the past few years by experiences of several operating companies in applying results of work done by the Gas Association on gaging gas-well deliveries. Benefits from this work have not been limited to determining open-flow volumes of individual wells but have been extended to "budgeting" drilling, compressor, and pipe line requirements by determining present and future abilities of individual wells and groups of wells to deliver gas into pipe lines against varying pressures. Delivery capacity data are needed especially in two kinds of gas-producing areas; those characterized by fluid or abrasive sand being produced from wells with gas at high rates of flow and those characterized by high bottom-hole pressures where expansion of gas produced from wells lowers gas temperatures and causes freezing difficulties. Such production problems, when solved, will increase availability of gas from individual wells, and now are receiving attention in the industry along with the inter-related problem of well spacing. Technically, it is becoming apparent that efficient drainage of gas from a reservoir can be obtained if wells are drilled sparsely, especially if rates of gas withdrawal throughout a field are equalized, but too often numerous wells are drilled to satisfy lease obligations and to compensate for reduced delivery capacities of individual wells caused by liquid, sand, freezing and other difficulties.

Conservation of natural-gas reserves is saving gas until it can be utilized efficiently. This implies proper utilization of energy forces within a reservoir to produce gas as it is needed for domestic and industrial markets, and is the basis of technical thought and general broad policies on conservation of gas reserves in combination gas and oil fields.

The life of a gas reserve is one of the important factors in planning a pipe line project to utilize gas from the reserve and at the same time comply with market requirements, and if operating conditions in a field allow gas production at such a rapid rate that only a small part of the gas can be utilized, resulting in rapid decline in reservoir pressure and consequent

rapid depletion of the gas reserve, there is little incentive for a gas operator to consider such a field as a part of his dependable gas reserves. This same condition also exists in portions of many of the major oil fields, particularly in fields with a gas-producing area "up structure" and a rim of oil "down structure." That portion of the field at or near the gas-oil contact usually is characterized by high gas-oil ratio wells, and it is an important problem from the standpoint of gas conservation and depletion of important gas reserves whether or not such wells should be operated as gas or oil wells. It appears that this important gas reserve problem should be studied from two angles; first, the legal basis a State can use for regulation; and second, a more thorough knowledge of the physical characteristics and behavior of hydrocarbon mixtures and resulting energy relationships which can be used as fundamental data in planning corrective measures. From the standpoint of oil conservation, it is important to realize that conservation of the gas conserves reservoir energy which in turn results in more efficient oil production.

Two principal conditions of gas accumulation exist in those oil fields where the conservation of gas reserves is a major problem; first, gas is confined in a separate reservoir just above an oil reservoir; and second, gas is confined in the same reservoir as oil, but separated gravimetrically from it. Under the latter condition, gas exists "up-dip" and a rim of oil is found "down-dip." The pressure-volume relationship in Fig. 1, curve 1, shows the volume of gas supposedly produced from a gas zone of one of the major oil fields in the Mid-Continent area plotted against the reservoir pressure. The gas zone immediately over-lies an oil-producing zone in this field, but is separated from the oil zone by impervious rocks. The curve shows an irregular decline comparatively early in the life of the reservoir and suggests that more gas was being produced from the zone than could be accounted for from wells completed in the gas zone. Later studies indicated "unaccounted-for" gas losses from the gas zone due to incomplete records of gas produced from classified gas wells, oil wells, completed in the oil zone, cased high into the gas-producing formation, shooting opposite the gas zones in both the gas zone and the lower oil zone, and possible migration of gas from the gas zone to zones of lower pressure. Comparing Curves 1 and 2 of Fig. 1, approximately 56,000,000 cu. ft. of gas (30 per cent of the gas reserve of reservoir energy) was lost.

Latest thought in the petroleum and gas industries stresses the importance of using gas not only for energy to produce oil but to take advantage of its physical characteristics when in solution with oil or mixed with oil to increase ultimate oil recovery. For example, gas in solution in oil under reservoir conditions helps oil to flow through reservoir formations; its liberation from solution with oil reduces the volume or causes "shrinkage" of the oil, decreases available energy in the oil, and increases viscosity and surface tension of the oil. Therefore, proper ultilization of gas to produce oil is of major importance to the oil industry. However, if benefits of gas from an oil-production standpoint are utilized fully, gas necessarily accompanies the oil from the wells, and pressures at which it can be produced into gathering lines for pipe-line requirements of a gas operating company are much lower than pressures at which gas is produced from normal gas wells. In fact, gas produced from many oil wells under normal operating methods is approximately at atmospheric pressure after separation from the oil, and there is a necessary expense in compressing it to pipe-line pressure requirements.

THE prolongation of the life of natural gas wells is one of the fundamental economic problems of the industry.

While natural gas, due to the ease and rapidity with which it migrates through the reservoir sand, is more readily recoverable than oil, this same quality makes its dissipation into barren formations and into the atmosphere more difficult to control. Surveys made in the Mid-Continent area tend to show that an average of 80 per cent of the initial reserve is recoverable and is removed before abandonment.

The value of accurate records, both of conditions encountered during the drilling of the well and of the history of its productive life cannot be overestimated. The first essential of this record is an accurate graphic log to be made during the drilling of the well. This log should show steel line measurements to all sands encountered, whether productive or otherwise, as well as similar measurements on all casing points and finally on the bottom of the well.

In actual drilling operations, particular attention should be paid to the following points as listed herewith:

1. Thoroughly inspect all casing and other material to be run in the well.

2. Test and log all sands encountered.

3. Reduce the number of sands penetrated to an absolute minimum. It is generally better practice to exhaust shallow sands before drilling to deeper producing formations.

4. See that all sands penetrated are properly protected, preferably by cementing.

5. Start the producing string as close as possible to the producing formation.

6. Make sure you obtain a positive shut-off of the producing string. Cementing, even on shallow wells, will pay dividends in the prevention of operating difficulties during the producing life of the well.

7. The depth of penetration of the producing sand will depend upon the characteristics of that particular sand. The average sand, having a thickness of some 30 to 50 feet, will be adequately drained through a penetration of from 5 to 10 feet. The initial open flow will be less than if the sand were penetrated to a greater depth; however, the protection from encroachment of salt water afforded by the lesser penetration of the producing formation will usually result in greater ultimate recovery.

The outside appearance and condition of the well should be checked at intervals. Valves should be checked for stuffing box leaks. The producing string should be checked for collar leaks. These can be remedied by lubricating with white lead and oil. The annular space between the surface pipe and the producing string should be thoroughly sealed to prevent the entrance of surface water. In this connection, I have recently noted that one of the major oil companies has adopted the practice of welding all surface casing to prevent the entrance of surface water into the space around the producing string. If it should become necessary to blow the well into the atmosphere, blow-offs should be installed in such manner as to prevent the spraying of salt water over the well fittings.

In so far as possible, the excessive releasing of pressure in the well should be avoided throughout its entire productive life. Well tenders should be instructed to report, immediately upon discovery, any increase in the production of fluid, or decrease in the delivery capacity of a well in order that a careful analysis may be made to determine the cause.

"... Of course I don't mean exactly that—but the analogy is there. Pie crust is a vegetable compound which you bake in the oven at about 500 degrees heat. Most of the ordinary finishes are vegetable compounds, too—baked on steel sheets at about the same heat.

"But porcelain enamel is a mineral substance. There is nothing organic or vegetable in it. And to make it have this lovely, lifetime finish—the heat in the firing furnaces goes as high as 1600 degrees. It is actually melted down like molten lava in the furnace and fused, or welded right onto its supporting metal.

"That's why it is flint-hard and non-absorbent; why it never fades or loses its lustre—why it is the lifetime easy-to-clean finish—why we always recommend it."

EDUCATIONAL BUREAU
PORCELAIN ENAMEL INSTITUTE, Inc.
612 North Michigan Avenue
Chicago

Have you seen the new book: "Selling Points for Household Appliances"? Send for your free copy today.

PORCELAIN ENAMEL *THE Lifetime Finish*

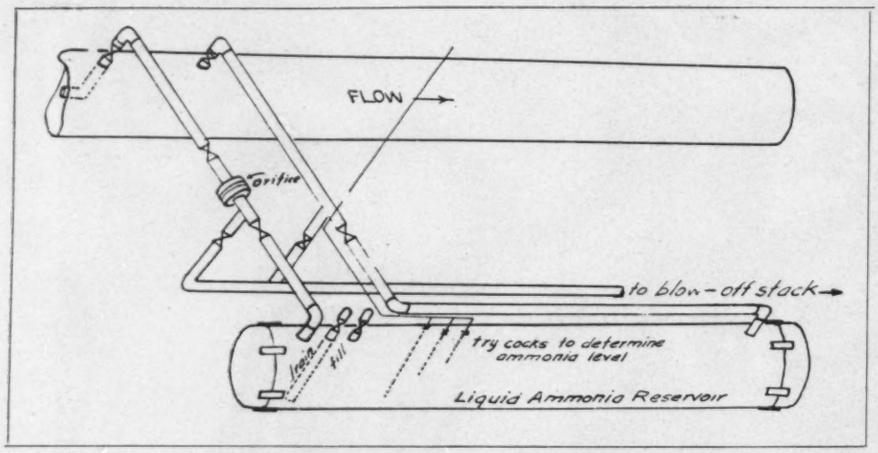


FIG. 1. Apparatus for continuous injection of ammonia into high-pressure gas transmission lines.

ANHYDROUS AMMONIA TO INHIBIT GAS HYDRATE FORMATION

● **J. T. RUSSELL, Panhandle Eastern Pipe Line Co., Liberal, Kan., addressing Natural Gas Department Convention, American Gas Association, Kansas City, Mo., May 10-14, 1937.—(Abstract by G A S)**

THIS paper describes the work which has thus far been done in using anhydrous ammonia as an additional constituent in the gas stream to prevent gas hydrate formation.

J. T. RUSSELL

After a series of laboratory experiments in which gas hydrates were formed in a glass tube at full line pressure, it was ascertained that the minimum concentration of ammonia effective for preventing the formation of these compounds was .0042 per cent by volume, or 42 parts per million (p.p.m.) The natural gas used in these experiments came from the Panhandle field and contained 0.2 per cent carbon dioxide. A pressure of 430 lbs. per sq. in. gage obtained during the experiments, and a gas temperature of 40° F. was used to induce gas hydrate formation. It is significant that the minimum concentration found in these experiments corresponds to a partial pressure of ammonia which should exist for the formation of ammonium bicarbonate. Moreover, carbonates were detected in the fluid resulting from the decomposition of the gas hydrates. This seems to indicate that ammonia owes its effectiveness as an inhibitor of gas formation to the fact that it combines with water to form a solution of ammonium hydroxide and ammonium carbonates. During these experiments it was also determined that water in contact with gas containing the minimum concentration would dissolve ammonia from the gas until a solution containing 4.702 per cent ammonia by weight was obtained.

Another series of experiments, lasting 72 days, indicated that with the particular gas used, the injection of ammonia would result in no damage to copper-bearing alloys used in transmission lines, such as brass valve seats, bronze valves, etc. Still another series of experiments indicated that concentrations of ammonia of 130 p.p.m., or even higher, might be used without resulting in the formation of solid ammonium salts by the reaction of water, carbon dioxide, and ammonia.

The indications of the laboratory experiments were subsequently checked by tests in the field under actual operating conditions.

The two following cases illustrate the use of ammonia to remove gas hydrate obstructions.

The first case illustrates the use of ammonia to remove what is called a "dead freeze"—a situation in which the hydrate obstruction has completely arrested the gas flow. So formidable was this obstruction that it could not be decomposed by removing the pressure on the down stream side and allowing full well pressure (app. 400 lbs. per sq. in. gage) to act on the other side. To remove the obstruction, the line pressure was reduced to atmospheric on both sides, and approximately seven lbs. of liquid ammonia was injected on the well side. Full well pressure was then applied to force the ammonia into contact with the obstruction. Removal of the obstruction occurred approximately 40 minutes after the injection of ammonia.

The second case illustrates the use of ammonia to remove hydrate obstructions which were slowly forming throughout a considerable length of large diameter transmission line. By injecting enough ammonia to maintain a concentration of 130 p.p.m. at the point of injection for 90 hours, the hydrate obstructions were completely removed, as evidenced by line deliveries again becoming normal.

A significant observation while using ammonia to decompose gas hydrates was that these apparently liquefy in place, while with alcohol such obstructions many times move down the line without liquefying, sometimes being removed in drips and sometimes lodging in a low sag in the line to start another obstruction.

The development of satisfactory apparatus to effect the injection of ammonia into high-pressure natural gas lines was another phase of the field investigation.

The type of injector found most satisfactory for continuous service is shown diagrammatically in Fig. 1. This consists of a Pitot tube to utilize the dynamic head of the flowing gas to cause a certain portion to be bypassed over liquid ammonia contained in a reservoir adjacent to the pipe line. In passing through the reservoir, the gas becomes saturated with ammonia vapor and re-enters the line through a tap at right angles to the flow. The desired concentration of ammonia in the gas stream is obtained by controlling the volume of by-passed gas by means of an orifice.

With a given size orifice, the concentration of ammonia in the line will vary with both the reservoir temperature and pressure. Except in unusual cases, the variation in pressure of high pressure lines will not affect the concentration of ammonia by amounts greater than can be tolerated in practical cases. The variation in reservoir temperature will, however, affect the performance of the injector noticeably—an increase of a few degrees serving to cause a pronounced increase in the concentration maintained in the pipe line. For example, an increase in temperature from 36° F. to 50° F. would, theoret-

THE Pacific STREAMLINE DE LUXE

A NEW FORCED-AIR UNIT THAT CLEARLY DEMONSTRATES PACIFIC LEADERSHIP IN THE QUALITY FIELD

★ Here, in this newest and finest addition to the Pacific line of gas heating equipment, is a source of increased load and a growing list of consumers who are enthusiastic boosters for gas heat.

With the Pacific Streamline De Luxe Blower Furnace you meet every demand for forced-air heating and ventilating—complete, automatic, trouble-free. You offer a unit whose beauty of exterior is matched by the traditional excellence of Pacific design and materials.

The streamlined casing of this unit is furnished in a choice of several attractive colors which will harmonize with decorative schemes where basements are used as recreation rooms. Gleaming chromium trim sets off sides and corners. All controls are completely enclosed for added safety.

Write at once for new sales literature now in preparation. Take our word for it that the new Pacific Streamline De Luxe Blower Furnace will outperform and outsell any other gas-fired unit in the quality field. Ask for Catalog GJ.

PACIFIC GAS RADIATOR COMPANY

1740 WEST WASHINGTON BLVD., LOS ANGELES, CALIFORNIA

ically, increase the concentration of ammonia in the pipe line from 31.6 to 42 p.p.m. In order to minimize the fluctuations caused by varying temperatures, the reservoir is buried to at least line depth.

This type injector is obviously applicable only to lines whose pressures exceed the vapor pressure of liquid ammonia at ordinary temperatures.

For injecting small amount of ammonia for removing gas hydrate obstructions, the apparatus consists of a small double-acting pump of ¾-inch base and 3-inch stroke mounted on a skid which accommodates a 100 lb. ammonia cylinder. At 40 strokes per minute, the discharge of a pump cylinder being considered a stroke, this apparatus will inject approximately 50 lbs. of liquid ammonia per hour.

For a cost comparison with dehydrates, the cost of blowing drips, which is avoided by dehydration, and the costs necessitated by operation, maintenance, and investment charges should be added to the cost of ammonia protection. This has been done in the case of an injector installed on a large-diameter transmission line, based on the following conditions: A flow of 100 million cu. ft. per day, 5.3 cents per pound as the cost of ammonia delivered, 126 days as the period during which injection is necessary, and $35 per day as the cost of dehydration. The following annual costs resulted: $2,694 as the cost of ammonia injection and $12,775 as the cost of dehydration. The annual cost of ammonia injection was based on the following cost items:

Cost of injected ammonia	$1,289
Labor, blowing drips	660
Labor, operating injector	325
Depreciation, etc. (10% per year)	420
Total	$2,694

The injection of ammonia into gas which may be used for domestic purposes is restricted by law, most state laws specifying 5-10 grains of ammonia per 100 cu. ft. as the maximum concentration allowable in domestic gas. The concentration necessary for inhibiting the formation of gas hydrates (42 p.p.m.) is, however, only 1.336 grains per 100 cu. ft.

MAKE 'EM ASHAMED!

● **WILL C. GRANT, advertising director, Lone Star Gas System, Dallas, Texas, addressing the American Gas Association Natural Gas Department Convention, Kansas City, Mo., May 10-14, 1937.—(Abstract by G A S).**

RESULTS of the national advertising campaign, as it nears the first year of its operation, are to be found chiefly in the public's subconscious mind. During the first year, the national advertising campaign has planted impressions, has changed the trend of national consciousness. This trend now is flowing toward the gas kitchen as the up and coming thing for up and coming people.

WILL C. GRANT

Most pointed indication of this change is in what might be called the resurrection of the dead,—namely, the dealers. And if the dealer is aroused, this means that the public is aroused, because the merchant is not going to stock something he doesn't think the public is interested in.

Now how to keep the ball rolling? Going back to the dealers—if the industry can get thousands of gas appliance dealers in the country all singing in the chorus with the gas industry, it will be a mighty and constantly swelling tide of articulation. Here are some of the steps by which to gain the dealer's interest, using the national campaign as the springboard:

First, show him the truly fabulous market of replacement that lies at his door step. Estimate by survey or some other means, the approximate number of obsolete gas ranges and water heaters on your lines. They can't stay in service forever. Who is going to replace them?

Second, show that this market is wide open to the dealer, that the national advertising campaign is stimulating this business for him.

Third, enlist the interest and cooperation of newspapers. Somebody must do some advertising to replace these ancient appliances. The special gas appliance section now enters. The newspaper, seeing the advertising possibilities, can be interested in publishing an entire section, devoted exclusively, both editorial and display space, to all of the wonderful things that can be said about modern gas appliances.

Lone Star has tried this in three of its cities and has obtained good results. Across the first page of the gas section, in each instance, was a banner heading something like this: "50,000 obsolete ranges in use in Dallas." This startled the customers and excited the dealers. These sections were full of interesting stories on all phases of gas ranges and modern gas cooking, and considerable on water heaters. Most of this material was supplied by the national campaign.

Following these gas appliance sections, there came an increase of gas range advertising by dealers. Better and more numerous window displays of ranges appeared, and on the part of editors, home economists, and advertising men on the newspapers there was born an interest in gas equipment.

While the national advertising campaign was explained at dealer meetings in the larger cities on the system, a concentrated campaign was conducted in one town. All gas appliance dealers in this town were invited to several dinner meetings. Slide-pictures of the national advertising program and methods of tying-in were presented. It was pointed out that in this city there were 6,000 obsolete ranges and 6,000 obsolete water heaters ready for replacement—a market of better than $1,000,000 waiting for them. The company's program of advertising and sales cooperation was explained in detail. The company arranged to finance dealers' paper allowing four-year terms. National advertising campaign material was made available, including display cards, price tags, "Controlled Cooking" booklet, and newspaper mats for ads. Dealers were also mentioned in all company newspaper and radio ads. Allowances were offered the dealers for each old gas range taken in, and for each electric range removed.

Schools were held for dealer salesmen and service men. There were cooking schools for dealer employees. A business institute was held showing best type of store arrangement, window display, advertisement, and sales presentation. Arrangements were made for the home economics department to follow up each dealer sale.

The company tied into national advertising campaign with its own newspaper ads, radio programs, merchandising displays in office and window, and intensified sales campaign by sales department.

A beautiful kitchen was built on the company's floor and placed at the disposal of dealers to show prospects.

WEDGEWOOD DOUBLE LIFT-UP COVER MODEL

with features June brides

WILL WANT

Wedgewood Double Lift-Up Cover Model
No. 3085-OT . . . Open Top
No. 3045-CT . Closed Top

WEDGEWOOD'S FEATURES MAKE EVEN THE "JUNIOR" COOK AN EXPERT

Remember, she's a MODERN woman, this month's JUNE bride. No kitchen drudgery for her! She'll want all the new conveniences of Wedgewood's new Double Lift-Up Cover Model... and the glorious kitchen freedom of Wedgewood's amazing automatic features. And being a "first time" home-maker, she'll doubly appreciate these cooking aids that make even the inexperienced cook an expert.

WEDGEWOOD'S NEWEST FEATURES

- Extra-large cooking surface
- Extra-deep oven
- Two super-speed-plus-simmer burners (in front)
- Handy new toaster rack combined with Astogril Broiler

WEDGEWOOD'S AUTOMATIC FEATURES THAT MEAN KITCHEN FREEDOM

- Grayson's Combination Cooking Clock and Signal Timer. (New feature in 3085-OT and 3045-CT)
- Grayson's oven temperature control
- Self-lighting speed-plus-simmer top-burners
- Self-lighting extra-low-temperature oven

WEDGEWOOD

THE MODERN GAS RANGE

"Makes Friends for Gas"

JAMES GRAHAM MANUFACTURING CO. . . . San Francisco, Los Angeles, Newark, Portland

Among results thus far obtained are: Improved dealer attitude toward the gas company, increased sales of ranges, water heaters and Electrolux, and more newspaper ads devoted to merchandising of gas ranges and gas as a modern fuel.

The company during the first four months of the activity sold twice as many ranges and water heaters as for the entire preceding year. Range and water heater sales doubled with no net increase in new business expense. The public mind swung away from the growing idea that there is nothing modern but electricity and swung back into the channel of "There is nothing like gas for cooking, water heating, refrigeration, and house heating."

I entitled this sketch "Make 'Em Ashamed," because I had in mind an advertising theme. Just what type of advertising will make people buy a new gas range nowadays? No one can be sure about definite results from advertising, but I believe you have got to shame the women into getting rid of that old range. You can convince them that gas cooking is economical, that it is clean, fast, and cool, and still they say "So what?" and "Why bring that up? I know the new ranges are clean, fast, economical, etc., but my cook is getting along all right with the one we have."

I believe we have got to show them the ludicrous inconsistency of a smart, up-to-date woman with her home well appointed and her clothes up to the minute, yet possessing in her kitchen a dilapidated ante-bellum range. The kitchen is the heart of the home. That's where the guests congregate. Are you ashamed of your kitchen? Or do you take pride in showing it to your guests? Would you drive a 1920 automobile? And so on.

If the modern woman can be shown that the gas kitchen is the smart and up-to-date thing, that all her friends are headed for gas kitchens, that it is the thing to do, it's the style, the mode, the tempo of the day, then a gas kitchen she'll have. This will be a more powerful pull than speed, economy, cleanliness, although these still must be the fundamental things back of the talking points of beauty, color and smartness.

The theme which The Peoples Gas Light and Coke Co. of Chicago has adopted is most interesting. Their survey showed that the majority of women bought gas ranges principally on appearance without very definite knowledge of the performance of the range. So this company pitched advertising on the performance of the range and its results in modern cooking.

Lone Star is following the reverse of this method. In one of its towns where a concentrated advertising campaign was necessary, a debunking series was started. Emphasized were the facts about fast, cool, clean, economical—to debunk the electric story on these points. From this the thought turned to glorifying the gas kitchen, showing its surpassing beauty and color, and by contrast trying to make them ashamed to have that old kitchen. The entire appearance of the ads was tuned to smartness and vogueishness.

The themes of economy and other operating benefits, which are reasoning themes, are essential, but something more is required. There must be an emotional appeal. The woman must "love," "adore," "darling-ize" the gas range in your window, and then she will buy it. You have to make them ashamed of the old and make them idolize and idealize the new.

Commission Denies Rate Raise To Peoples Gas Light Co.

Application of the Peoples Gas Light & Coke Co., Chicago, Ill., for an increase in gas rates was denied by the Illinois Commerce Commission on May 22.

The Commission refused the increase on the grounds that an inventory showed the company's property had a value of not more than $120,000,000, and that the net income of the company for 1936 and 1937 would be not less than $7,000,000 annually, constituting a return of 5.95 per cent on the investment. The company placed the value of the property at $165,000,000 and asked to be allowed an income based on that figure. The company contended the return should be not less than 7 per cent.

George A. Ranney, chairman of the gas company, stated after the decision of the Commission was announced that the order was an arbitrary denial of justice and that the company will continue litigation in the courts.

■ ■

House Committee Approves Natural Gas Legislation

The Interstate Commerce Committee of the United States House of Representatives has approved legislation to regulate the transportation and sale of natural gas in interstate commerce.

The bill, H. R. 4008, was introduced by Congressman Brown of Michigan. A hearing was held before the committee on March 24 and 25. Among those who testified at the hearing were Robert D. Garver, Kansas City Gas Service Co.; Russell G. Hunt, Syracuse Light Co.; W. A. Dougherty, Natural Gas Pipelines; Francis L. Daily, Chicago District Pipeline Co.

An identical bill has been introduced in the Senate.

■ ■

Utilities Advertising Group To Meet June 22

The Public Utilities Advertising Association will hold a meeting on June 22 during the four-day annual convention of the Advertising Federation of America at the Hotel Pennsylvania, New York, N. Y. J. R. Pershall, Public Service Co. of Northern Illinois, Chicago, will speak on "The Merchandising Plan Comes First." Kenneth Magers, Union Gas and Electric Co., Cincinnati, will discuss "Making the Best of Catastrophes." T. K. Quinn, Maxon, Inc., is the luncheon speaker. Robert E. Ginna, Rochester Gas and Electric Co., Rochester, N. Y., will speak during the afternoon, on the topic, "Who's Being Kidded?"

Two symposiums will be conducted and an address given by D. D. Parry, Wilson & Haight, Inc., Hartford, Conn., president of the advertising association.

■ ■

Death Claims M. C. Robbins, Gas Industry Publisher

Merton Covey Robbins, chairman of the Robbins Publishing Co., New York City, publishers of *Gas Age-Record & Natural Gas*, died of a heart ailment in the Harkness Pavilion of the Columbia-Presbyterian Medical Center, May 20. He was 62 years old. His home was in Pelham, N. Y.

Born in Brattleboro, Vt., the son of Marcus R. and Almira L. Robbins, he graduated from the University of Vermont in 1898, receiving a B.S. degree in Civil Engineering.

Mr. Robbins started as western representative of *Engineering News* in 1899. By 1910 he was general manager of *Iron Age*, a position which he held for eight years. In 1918, he started in the publishing business for himself, purchasing *Gas Age* and *Brown's Directory of American Gas Companies*. With these publications he founded the Robbins Publishing Co. which, in the intervening years, has branched out into other fields until it now publishes *Advertising & Selling*, *American Perfumer*, *American Printer*, *Gas Age-Record & Natural Gas*, *Gas Appliance Merchandising*, *Industrial Gas*, and *Brown's Directory of American Gas Companies*.

■ ■

United Gas Promotes Wright To District Managership

L. A. Wright, who has been manager of the San Marco office of the Southern Gas Utilities, Inc., Houston, Texas, was recently promoted to the position of district manager at Liberty, Texas, for the United Gas System. The district embraces 12 towns. Mr. Wright has been at San Marcos for three years. Formerly he was with the United Gas System at Robstown.

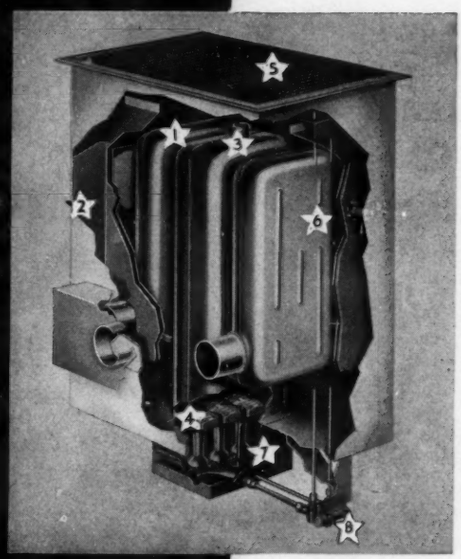
L. F. Martin, who has been manager of the system's Floresville office, succeeds Mr. Wright as manager at San Marcos.

OUT OF SIGHT...

...BUT THEY NEVER STOP SELLING YOU!

★ STAR *Features* OF THE NEW

PAYNE FLOOR FURNACE



- ☆ NEW STREAMLINED HEATING ELEMENT.
- ☆ NEW RIGID UNIT ASSEMBLY.
- ☆ NEW LIGHTING ARRANGEMENT.
- ☆ NEW BURNER DESIGN.
- ☆ NEW FLOOR GRILLES.
- ☆ NEW AIR FLOW FEATURE.
- ☆ NEW "UNITIZED" BURNER ASSEMBLY.
- ☆ NEW GAS VALVE AND MANIFOLD.

The Payne Floor Furnaces are entirely new... but their newness is born of Payne's 23 years experience in producing gas-fired equipment exclusively!

The outstanding improvements of the new Payne Floor Furnaces have been exhaustively tested. They are real improvements that make gas heating even better heating.

A Payne Floor Furnace keeps itself sold... is a constant good will builder for those who sold it.

Payne Floor Furnaces were the first to be approved by the American Gas Association Laboratory. Please write for complete details.

Payne

FURNACE & SUPPLY COMPANY, INC.
BEVERLY HILLS, CALIFORNIA

A Century of Natural Gas Discoveries

(Continued from Page 24)

this section are also producing considerable gas. In Western Texas the Big Lake field, which was discovered in 1923, has been producing gas since 1925; the Oklahoma Natural Gas Corp. recently built a pipe line to it.

The nation's greatest natural gas field, the Panhandle field of Texas, was first discovered in December, 1918, when oil prospectors brought in a gas well with a daily capacity of 5,000,000 cu. ft. During the succeeding seven or eight years other "wildcatters" found more of this "dry, sweet" gas for which there was no market. Then, in 1926 the Lone Star Gas Co. extended a 200-mile pipe line to the field because its gas supply in the Petrolia field was nearly exhausted. Today this gas field is a 90 or 100-mile uplift with more than 500 gas wells which serve nine long-distance pipe lines.

As early as 1882 gas was observed in some of the water wells of Oklahoma. A few homes in Red Fork were lighted with gas in 1902. As in other southwestern states, there are now many small gas producing fields in Oklahoma. For example, the Quinton and Chickasaw "dry" gas fields of Oklahoma, which were discovered in 1913 and 1922 respectively, are still productive. Early in 1932 the Sayre gas field of western Oklahoma, which some persons believe is an extension of the Panhandle field, was opened with the completion of a 30,000,000 cu. ft. "gasser." Today the Oklahoma City gas field, which was opened in 1926, is the most prominent of all Oklahoma gas pools. At an average depth of 6,300 feet a prolific and high pressure gas sand, the Wilcox zone, was found; the gas-oil ratio varies from 5,000 to 8,000 cu. ft. of gas per barrel of oil. One Oklahoma City well, the Nettie Emerson, with an initial daily open-flow of 200,000,000 cu. ft., is probably the largest gas well ever completed in the United States. Again it is to be noted that an important gas field has been the scene of reckless over-drilling and gas waste.

There were recorded discoveries of natural gas as early as 1825 in Natchitoches Parish of Louisiana. Between 1850 and 1860 gas was also found near Lake Providence in northeastern Louisiana, when wells were being dug for water. In 1908, following the drilling for oil as early as 1900, the Caddo field of northeastern Louisiana was one of the most promising gas fields of the nation, but there was no profitable market for the gas, and, consequently, much of the gas was recklessly blown to the air because the operators hoped thereby to start a flow of oil. The leading present-day gas fields in Louisiana are the Monroe and Richland fields in the northeastern part of the state. Gradually in the Monroe field a proven area of about 250,000 acres with 900 gas wells possessing an average daily capacity of 10,000,000 cu. ft. per well, has been developed. Generally, the gas wells of the Richland field, which is 10 miles south of the Monroe field, have been large volume, high pressure ones, several of the wells having had an open-flow capacity in excess of 50 million cu. ft. per day. Not until 1926 did this field of 200 or more square miles of proven area become a prominent gas producing district. Several new long-distance pipe lines and numerous short lines receive their gas from the Monroe-Richland area. It was in the Thomason area of the Richland field that volcano-like craters as much as 300 feet wide resulted from "blow-outs" of "wild" wells. Recently, large "gassers" have been completed in the Zwolle and Rodessa fields of northwestern Louisiana.

The significant early Kansas gas fields were found in the southeastern part of the state. In 1860, however, the first gas wells of Kansas were found in Wyandotte County near Kansas City, and illumination of a sanitarium at Iola in 1873 was the first use of gas in Kansas. In the 'eighties and 'nineties many gas discoveries were made in southeastern Kansas; some gas wells rivaling the "Big Moses" and others of eastern fields were brought in near Caney and Independence between 1904 and 1906. When the "Maggie Vanderpool" well, which was opened in 1906 near Caney with a daily capacity of 36,000,000 cu. ft., caught afire "the prairie flowers came into blossom although it was winter;" "the roar was so deafening that it could be heard miles away." In recent years discoveries in Barber and McPherson Counties and with the development of the Hugoton field, there has been a migration of natural gas production toward the western part of the state. The first well in the Hugoton field of southwestern Kansas, now estimated to be the nation's second largest field, was completed in 1926. Today the proven area of the Hugoton field is approximated at 1,000,000 acres and the gas reserve is estimated to be two-thirds the reserve of the Panhandle field.

As early as 1870 gas was found in the coal measures near Fayetteville, Ark. Between 1902 and 1904 gas pools were located in the neighborhood of Fort Smith. Production of gas was begun in 1915 from the Kibber field, seven miles east of Van Buren. Some large wells have been completed in the Clarksville field which was opened in 1925.

Since 1903 sporadic attempts have been made to find oil and gas in Mississippi. The first wells in the Amory and Jackson fields of Mississippi were completed in 1926 and 1929 respectively. Of these fields the Jackson field is now the most important source of gas in Mississippi.

Rocky Mountain Fields

Many relatively small fields dot the Rocky Mountain area. The limitation of distance to sizeable markets and the concomitant sparseness of population are particular impediments to the utilization of the gas reserves of this region. Considerable gas was encountered in a well drilled for water at Fort Assiniboine, Montana, in 1892 or 1893. In 1924 the Bowes field near Havre was opened. There has been sufficient gas in the Baker-Glendive, Kevin-Sunburst, and Dry Creek fields of Montana, which were located in 1913, 1922, and 1930 respectively, to justify construction of long-distance pipe lines.

As in other western states, natural gas was commonly used by Wyoming ranchers whenever the gas wells were nearby. Two "fair" gas wells were completed in the Brenning Basin near Douglas, Wyoming, in 1903. In 1907 three gas-oil wells were completed in Big Horn County, and in 1915 a gas well with an initial flow of 40,000,000 cu. ft. was opened in the same county. The discovery well of Little Buffalo Basin field with an open-flow of 30,000,000 feet was "brought in" during 1914. Big Sand Draw field was initially drilled in 1917 and 1918. The Baxter Basin and Hiawatha Dome fields of Wyoming, both of which were discovered in 1922, are particularly outstanding since they serve the Salt Lake City pipe line.

In 1886 natural gas from shallow wells on the shore of Great Salt Lake was being used to manufacture salt. At the same time sufficient gas to illuminate 20 "medium-sized" lights was obtained from a 175-foot well in

CUT YOUR ANNUAL COST

with Anaconda Copper Tubes for small mains and services

SEVERAL well-known utilities have found that the *far superior durability* of Anaconda Copper Tubes makes their average annual cost very much less than that of rustable lines. In fact, experience has indicated that, when used for small mains and services, the rate of corrosion on copper is only about one-tenth as rapid as on rustable metals.

Small wonder that Anaconda Copper Tubes are being used increasingly by the gas industry... especially since the first repair job of any consequence to rustable lines would cost far more than the original saving which they afforded.

All Anaconda Copper Tubes are deoxidized to increase corrosion resistance and improve physical properties. And they are carried in stock by leading supply houses in all sections of the country.

What kind of fittings?

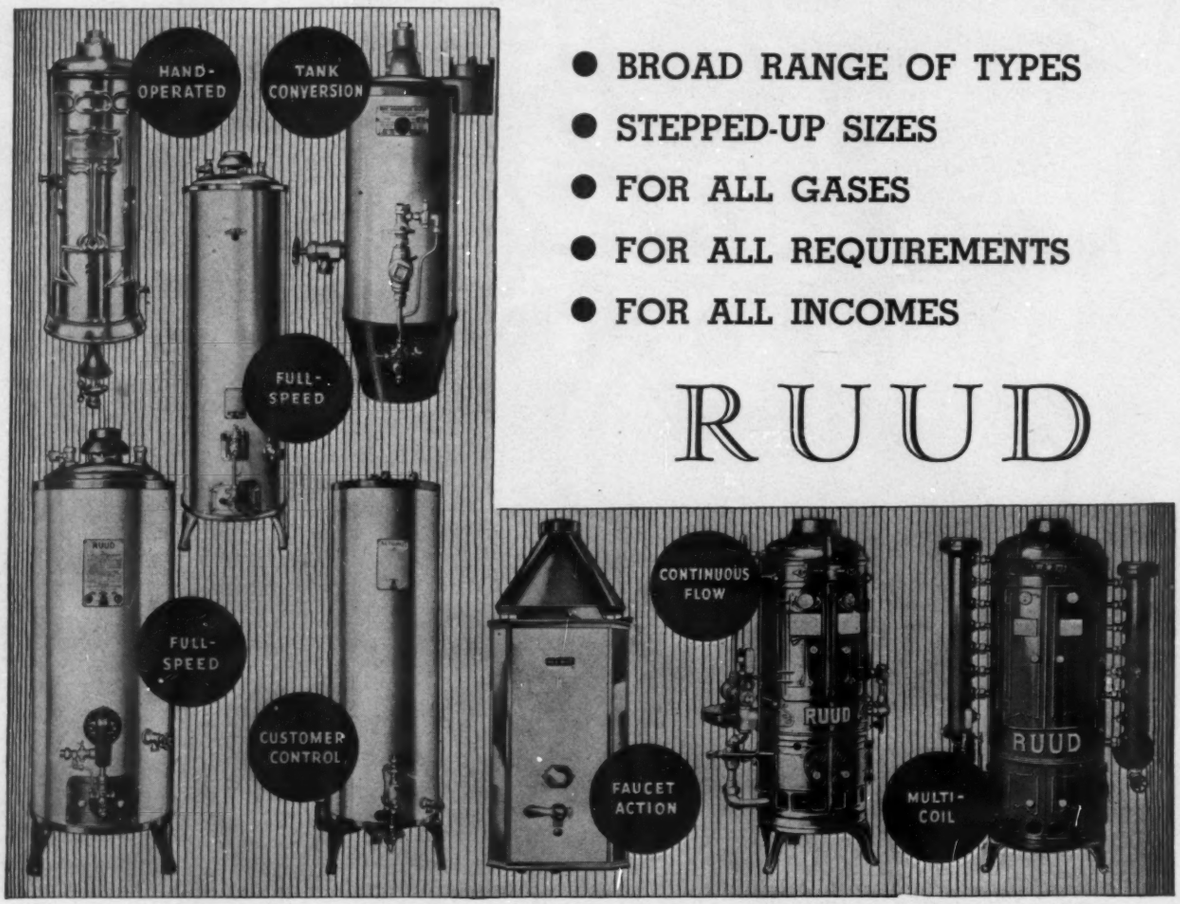
The American Brass Company recommends that all copper tubes installed underground be connected by means of flared tube fittings, or special fittings. If solder type fittings be employed, the joints should be brazed or welded rather than soft soldered. Underground lines are frequently subjected to considerable movement caused by constant shifting of the soil. The mechanical joint secured by the flared tube type of fitting is better adapted to such service than soldered connections.

3765

Anaconda Copper & Brass

THE AMERICAN BRASS COMPANY • General Offices: WATERBURY, CONNECTICUT

Offices and Agencies in Principal Cities • In Canada: ANACONDA AMERICAN BRASS LTD., New Toronto, Ont.



- BROAD RANGE OF TYPES
- STEPPED-UP SIZES
- FOR ALL GASES
- FOR ALL REQUIREMENTS
- FOR ALL INCOMES

RUUD

ONE water heater or ONE water heater type cannot do a complete selling job today. Conditions differ from city to city and from home to home so that successful selling is more and more dependent upon a wide range of types, sizes and prices.

This you will find in the RUUD line of gas water heaters. Write for the complete, looseleaf catalog.

RUUD MANUFACTURING COMPANY
Pittsburgh, Pa.

RUUD QUALITY

Ogden, Utah. With these exceptions, there have been no gas field developments in Utah. The Emery County, Cisco and Clay Basin fields are recently discovered and promising, but undeveloped, sources of natural gas. In 1903 a small gas deposit, which was discovered three miles from Boulder, Colorado, was soon supplying the town with fuel and light. In 1914 Fort Collins, Colorado, began receiving gas from a nearby field—recently (1922) the Wellington field has been developed in the same locality. As soon as a profitable market is assured it is believed that a "drilling campaign" in Colorado will locate some large deposits of natural gas.

"Notable" quantities of gas and oil were found in southeastern New Mexico between 1900 and 1910. Recent supplies of natural gas in New Mexico come particularly from the Jal field in the southeastern part of the state, where the principal discoveries were made between 1926 and 1928; this field supplies the long-distance Phoenix pipe line with gas. Also, during the last decade the Ute Dome and Artesia-Jackson-Maljamar fields have been developed in New Mexico.

California Fields

From 1885 to 1900 the gas fields at Stockton were the principal source of California's natural gas supply. Between 1904 and 1910 additional gas supplies were found in the Ventura and Buena Vista Hills oil fields. In 1913 Los Angeles received its first natural gas from the Midway-Sunset field, which had become a prominent source of gas in 1910 and 1911. In 1913 the daily natural gas capacity of the combined Midway and Buena Vista Hills fields was 50,000,000 cu. ft. Between 1914 and 1919 the Coyote Hills, Montebello, and Richfield fields were developed, adding thereby to the state's gas production. In 1919 a "tremendous dry gas supply" was discovered in the Elk Hills field. The Buttonwillow field of central California, which was opened in 1927, is now supplying considerable quantities of gas to the long-distance pipe lines of the state. Since 1930 the outstanding natural gas field of California has been the Kettleman Hills field, which is located about 250 miles southeast of San Francisco. Since 1900 a dozen attempts had been made to find oil on this barren desert ridge, only to fail because the wells had not been drilled to sufficient depth. Finally, on October 5, 1928, the discovery well of the Milham Exploration Co. "blew in" at a depth of 7,108 feet. Initially the gas pressure of the field was in excess of 3,000 pounds. Several fields, viz., the Edison and Mountain View, are other gas producing pools developed recently near the Kettleman Hills field.

Geographic Changes in the Source of Gas

A dwindling supply of gas from the eastern fields between 1889 and 1900 was off-set partially by new supplies of gas from deeper sands. In recent years the heavy production of natural gas in the Mid-Continent, Gulf Coast, and the Pacific Coast fields has more than compensated for the decline of the gas supply in the eastern fields. Generally since 1906 the supply of natural gas from Pennsylvania and Ohio fields has been gradually diminishing. From 1909 to 1923 West Virginia was the nation's leading natural gas-producing state; at present the natural gas production of West Virginia is less than one-third of the gas production of this state in 1917. During the last 15 to 20 years the leading natural gas producing states of the west have increased greatly their volume of gas production. After the great Panhandle gas field began to develop, Texas became shortly the nation's leading source of natural gas. Although Oklahoma's gas supply has come from scattered fields, this state ranked first in production between 1923 and 1928.

In 1910, as indicated in Table No. 1, the states of West Virginia, Pennsylvania and Ohio produced 71.9 per cent of the nation's natural gas, whereas the states of Oklahoma, Louisiana, California, and Texas produced 12.0 per cent. In 1934 the same western states produced and delivered to customers 76.3 per cent of the country's natural gas and the three eastern states delivered but 13.9 per cent.

The output of gas fields will wax and then wane as in the story told here. There may be in the future as in the past a shifting of the source of production because there is not an infinite commercial quantity of gas in developed fields. And there may continue to be dissipation of gas by wealth-bound oil producers or careless gas-well owners. Perhaps, however, a rising field price for natural gas or awakened legislators will close the exits through which gas now freely flows to the air. Too, continuance of the recent revival in pipe line construction will discourage waste and encourage prospecting for new gas fields and deeper gas sands. Judicious use of this heritage will forestall the trials to be encountered when the not unlimited quantities of this irreplaceable natural resource become more scarce.

A. G. A. LABORATORIES TO OFFER HOME SERVICE COURSE

A training course for home service will be given at the American Gas Association Testing Laboratories in Cleveland, Ohio, June 15-18. The course is sponsored by the A. G. A. Home Service Committee and has been designed for a dual purpose, according to those in charge.

First, the course will offer to students and teachers in colleges of home economics an opportunity to study the work of home service. Girls interested in entering the home service field can gain at first hand a knowledge of the nature of the work which, it is said, will enable them to be more readily absorbed into the home service departments maintained by gas companies.

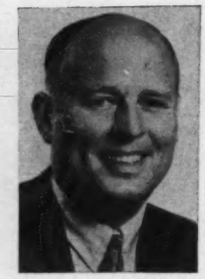
Second, the course is open also to staff members of home service departments. It is of particular interest to those home service people who are new and would like this over-all picture to adapt to their own home service jobs. The course is to be kept basic, and as a result, it is stated, will perhaps be elementary to experienced home service directors. Sales managers in charge of home service, the committee feels, might find it an advantage to attend a course of this nature.

The program will include a study of actual demonstrations, skits portraying different types of home calls, and practical instruction on the care and operation of gas equipment. Exhibits are being arranged to augment the instruction course. Kitchen organization will be shown as well as basement arrangements featuring heating and hot water systems.

The morning sessions will be held at the Carter Hotel, and the afternoon meetings at the A. G. A. Testing Laboratories. Elizabeth Sweeney, of the Empire Gas & Electric Co., Geneva, N. Y., is chairman of the Home Service Committee, and will preside at all sessions. Questions on enrollment should be sent to Jessie McQueen, Home Service counsellor at A. G. A. headquarters, New York City.

H. L. MASSER

F. M. BANKS


L. M. EDWARDS

WILLIAM MOELLER, JR

F. J. SCHAFER

LEE HOLTZ

SET PERSONNEL OF MERGED L. A. COMPANIES

MEETING in Los Angeles on Friday, May 14, the board of directors of the Southern California Gas Co., merged with the Los Angeles Gas and Electric Corp. on May 13, confirmed the appointment of Addison B. Day as chairman of the board and of A. B. Macbeth as president and general manager.

The following outline of the organization of the new company was made public:

Harry L. Masser, former vice-president and assistant general manager of the Los Angeles Gas and Electric Corp., becomes executive vice-president, and will have supervision over gas distribution and manufacture, division managers, purchasing, rate and valuation, personnel, and accounting departments.

F. J. Schafer continues as vice-president in charge of distribution and manufacture.

E. N. Simmons, auditor Los Angeles Gas and Electric Corp., becomes comptroller of the company, and G. A. Detrick, general auditor for Southern California Gas Co., continues in that position.

The treasury department will be under the supervision of W. E. Houghton, vice-president. L. D. Romig will continue as treasurer, assisted by H. L. Phelps and L. B. Wilson.

LeRoy M. Edwards becomes vice-president and special counsel. T. J. Reynolds, as vice-president and general counsel, will continue as general counsel of the company, performing the same duties as in the past, supervising general legal work, lands and rights of way and tax matters. Neil G. Locke and L. T. Rice will act as assistant counsels. Lands and rights of way will be in charge of Allen M. Cleveland; tax matters will be in charge of R. U. Fitting.

William Moeller, Jr., vice-president in charge of natural gas production and transmission, will continue his present duties, with H. P. George as general superintendent of production and transmission, as his assistant. Mr. Moeller also will have general supervision of certain engineering departments, stores and transportation. William Maddock will be in charge of stores with George Knox and Ernest Bullard as assistants. Transportation will be under the immediate direction of P. A. Patchen. Roy Bauer will continue as gas supply supervisor. Ben Laulhere will be in charge of miscellaneous engineering for the production and transmission department and certain other departments.

F. M. Banks, vice-president in charge of sales and advertising, will also have charge of the customers department. He will have as his assistants in sales work Frank Weiss of the Los Angeles Gas and Electric Corp., W. M. Jacobs, general superintendent of sales, and J. S. Spaulding as advertising manager. O. L. Moore, manager of the customers department of the Los Angeles Gas and Electric Corp., continues in this capacity with the Southern California Gas Co., and F. C. Ingram, formerly general superintendent of the customers department for the Southern California company, becomes his assistant. H. E. Davidson will be assistant in the customers department.

C. L. Whitehill, secretary, will continue in that position, with F. E. Seaver, of the Los Angeles Company as assistant secretary.

R. R. Blackburn of the Southern California company becomes general agent, handling claims, insurance and safety; in addition, Mr. Blackburn will have charge of certain divisions of personnel work. Guy W. Wadsworth, Jr., of the Los Angeles company, continues his position of personnel counselor in the Southern California company. Daniel L. Scott will supervise the publication of company house organs and direct various phases of employee affairs.

H. J. Kister will continue as purchasing agent, with G. W. Carbee as assistant purchasing agent. E. H. Wetlaufer will continue as rate and valuation engineer.

J. G. Rollow, chief engineer for the Los Angeles company, becomes supervising engineer of the company, having charge of gas manufacturing departments and holder stations. In addition, he will supervise the work of the engineering design department, civil engineering and general construction, the latter being under the immediate direction of W. R. Shettel, formerly construction engineer for the Los Angeles company, who continues in his previous capacity.

Lee Holtz continues his position as general superintendent of distribution, having supervision of the activities of this department for all divisions. Mr. Holtz will have as his principal assistants, as superintendents, W. M. Henderson and Elting Henderson.

The various Division Managers continue their former positions; H. C. McAllister as manager of the Eastern Division; S. C. Singer, manager of the Northern Division; J. F. Murray, manager of the Southern Division; George Porter, manager of the San Joaquin Division; and A. B. Newby, the Kern Division. District managers of the Los Angeles company continue in their posts: Geo. S. Campbell in Pasadena; L. E. Green, Hollywood; M. A. Seeley, Huntington Park; Clarence Bates, Alhambra; and C. S. Graves, Inglewood.

■ ■

Sec. Robert D. Davey Dies

Robert Davey, secretary of the Consumers Powers Co., Jackson, Mich., died recently from a heart ailment. He was 64 years old. Mr. Davey joined the company in 1905 as auditor.

"Shucks, I can turn all mine off in
60 seconds . . . they're Nordstroms"

THE PERFECT APPLICATION OF A PRINCIPLE

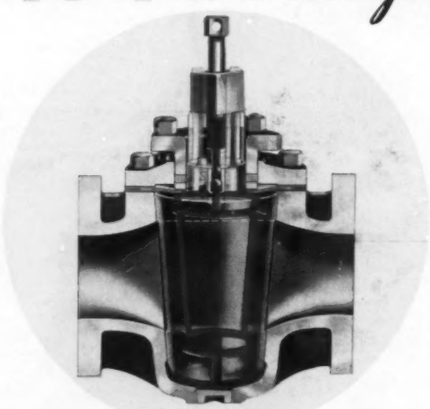
WHY *a plug valve?*

A plug cock is the oldest design of valve known. Simplest to operate. Quickest to open or close. Absence of exposed seats and threads, sliding plates and channels permit longer life.

WHY *a lubricated plug valve?*

A plug valve, particularly larger sizes and when handling high pressures or corrosive line contents, will stick and seize unless a means is provided for lifting the plug and for keeping its surfaces lubricated.

WHY *a "Sealdport" lubricated plug valve?*



In Nordstrom Valves a plastic lubricant is efficiently distributed over the entire bearing surfaces by means of the exclusive, patented "Sealdport" method of hydraulic lubrication. "Sealdport" lubrication forms a pressure seal substantially around the ports of the valve. There is no "break" or opening in this pressure seal where line contents can channel through. Internal and external leakage is prevented. Nordco lubricants are furnished in every desired consistency, having various lubrical and plastic properties. Years of research have resulted in a line of lubricants that are best adapted to each valve service.

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ONLY NORDSTROMS MEET EVERY MAJOR VALVE NEED

MERCO NORDSTROM VALVE CO. *A Subsidiary of* **PITTSBURGH EQUITABLE METER CO.**

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NORDSTROM VALVES

LUBRICATED PLUG

PATENTED "SEALDPORT" LUBRICATION

J. B. WILSON NAMED PRESIDENT OF LACLEDE GAS LIGHT CO.

J. B. WILSON

B. F. PICKARD

J. B. WILSON, engineer and utility executive, has been elected president of The Laclede Gas Light Co., St. Louis, Mo., by the company's new board. He took office on May 10.

Mr. Wilson began his career 25 years ago as power sales engineer for the St. Joseph Light, Heat & Power Co., St. Joseph, Mo., a Henry L. Doherty & Co. property. After three years in this position he was advanced to commercial manager and assistant to the president of the Meridian Railway Gas & Electric Co., Meridian, Miss. Later he was transferred to the Ohio Public Service Co. at Massillon, Ohio. There he had charge of new business and public relations and for two years was general manager.

Resigning from the Cities Service organization in 1925, Mr. Wilson joined the General Engineering and Management Corp. of New York, serving as vice-president in charge of new business and public relations of the Western United Gas and Electric Co., Aurora, Ill. In 1927, after sale of the property to the Insull interests, he was transferred to the Coast Counties Gas & Electric Co., with headquarters now in Santa Cruz, Calif. Under Mr. Wilson's management, the properties changed from manufactured to natural gas.

In 1933 the trustee for the Middle West Utilities Co. appointed him vice-president, to supervise the operation of nearly 80 companies in Kansas, Missouri, Oklahoma, Texas, Louisiana, and Mississippi.

Ben F. Pickard, who has been executive head since the resignation of Edward P. Gosling, former president, has been elected operating vice-president.

George H. Schlatter, who has been merchandising manager of the Iroquois Gas Corp., Buffalo, N. Y., since 1933, has been named general sales manager of the company.

Mr. Schlatter's first utility experience was gained with the Dawes Brothers in the Central Indiana Group. He read meters, laid mains, ran service lines, and worked in the office until 1919 when he was chosen to set up a sales division. In 1924 he was transferred by the Dawes Brothers to the Jacksonville Gas Co., Jacksonville, Fla. When the company was purchased by the Commonwealth Power Corp. in 1927, he was transferred to Birmingham, Ala. In 1931 he became assistant sales promotion manager of the Electrolux Refrigerator Sales Co., but in 1933 decided to return to the utility field and joined the Iroquois Gas Corp., where he has remained until his recent affiliation with The Laclede Gas Light Co.

While in the South, Mr. Schlatter was secretary-treasurer of the Southern Gas Association.

Other officers elected are John Duncan, vice-president; E. L. White, secretary and treasurer, and Alfred Hirsh, assistant secretary and treasurer.

The position of board chairman, it is stated, will be left vacant indefinitely.

L. Wade Childress is chairman of the executive committee, whose other members are: E. E. Pershall; A. Wessel Shapleigh, A. L. Jackson, and M. E. Feiwell.

SOUTHERN CALIFORNIA CO'S. IN $5,000,000 BUILDING PROGRAM

REINFORCEMENT of southern California's natural gas system to meet emergency demands such as occurred during recent winter months will require capital outlays aggregating $5,000,000 in 1937, according to estimates by engineers of the Southern California Gas Co., the Los Angeles Gas and Electric Corp., and the Southern Counties Gas Co. The first two mentioned companies effective June 1 were merged under the name of Southern California Gas Co.

The largest single job contemplated is the installation by Southern California Gas Co. of 13 miles of 22-inch transmission pipe line from Newhall Station to connect with the existing 22-inch line north of Castiac. The cost of this work is estimated at $455,000.

Other large pipe line installations to provide greater flexibility and increased capacity in Southern California Gas Co.'s transmission system will be made in the San Joaquin Valley and in the Los Angeles area. Gas company engineers estimate $325,000 as the cost of these jobs.

Both the Southern California Gas Co. and the Southern Counties have under consideration plans to erect additional storage facilities and compressor units. The cost of this work is set tentatively at $425,500.

Preliminary estimates drawn up by engineers of the three companies fix the cost of main extensions and replacements, new services and meters, transmission line tie-ins, storage holders and compressor units at $4,691,000. It is estimated that over 50 miles of pipelines, exclusive of distribution main extensions, will be laid during the year.

Among the communities that will be benefitted by the construction program of Southern Counties Gas Co. are the Monrovia district ($262,000 for new pipe lines and additional service facilities); Santa Monica Bay district ($87,000 for main extensions and replacements); San Pedro, Wilmington, and vicinity ($228,900 for mains and service facilities). In Pasadena, the Los Angeles Gas & Electric Corp. will spend $200,000 for new pipe lines and additional compressor equipment.

■ ■

Northwestern Utilities In $210,000 Spending Program

A $210,000 spending program for capital and maintenance work has been reported for Northwestern Utilities, Ltd., which serves Edmonton, Alta., Canada, with gas from the Viking field.

The main transmission line east from Bonnie Doon will be duplicated for 5 miles with 12¾-inch pipe, at a cost of $150,000. Maintenance of the company's lines and plants will take about $60,000. Property for a pipe yard has been bought at Edmonton.

■ ■

Seattle Has Building Bureau

A building material exhibit and central housing information bureau has been opened at 1910½ Fourth Avenue, Seattle, Washington. The object of the bureau is to give free service to people planning to build or modernize, including advice on materials, financing, and home equipment. It is financed by members and exhibitors. The Seattle Gas Co. has an attractive exhibit featuring ranges, water heaters, and refrigerators.

A. E. HIGGINS

E. H. POE

Poe Succeeds Higgins as Natural Gas Secretary

E. HOLLEY Poe, formerly assistant general manager of the Central States Power & Light Co., Tulsa, Okla., has been appointed secretary of the Natural Gas Department of the American Gas Association, succeeding Captain A. E. Higgins, of Dallas, Texas, who resigned to become vice-president of the Pittsburgh Equitable Meter Co., Pittsburgh, Pa., according to announcement at the annual convention of the department in Kansas City.

The office of the Natural Gas Department will continue to be in the Dallas Gas Building, Dallas, Texas, and Mr. Poe will make his headquarters there.

A native of Oklahoma, Mr. Poe has had a varied career in the natural gas and oil industries, including operating experience. Educated in the public schools of Tulsa and Morgan School, Fayetteville, Tenn., he spent his summer vacation periods working in the oil and gas fields as a roustabout. After preparatory school, he studied law for two years in the office of his father. During this period he looked after insurance adjustments, commercial matters, brief work, tax matters and accounting.

Following this, Mr. Poe was employed by the Slick Oil Co. in various office capacities until January 1, 1916, when this company was sold to The Sinclair Oil Co. At that time he became engaged in business for himself and built and sold several gasoline plants. On September 1, 1918, he joined the Tidal Oil Co., where he worked under C. E. Hane, then vice-president and secretary-treasurer of that company.

In June, 1920, he joined several associates in the organization of the Wooster Oil Co., Henryetta Gas Co. and Tiger Mountain Oil Co., with headquarters in Tulsa. Mr. Poe stayed with this group until September, 1927, when the gas producing, transportation, and distribution properties of these companies were purchased by Central States Power and Light Corp., Tulsa. With the sale of these properties, he joined the Central States organization, being employed for the past few years in various capacities including operations, property acquisition, preliminary appraisals, public policy, and other general executive duties.

Mr. Poe is a member of the Board of Governors of the Associated Industries of Oklahoma, president of the Oklahoma State Safety Council, and member of the Public Policy Committee, Oklahoma Utilities Association.

He is married and has two sons, one 18 years old, who is enrolled in chemical engineering in the University of Oklahoma, and the other, 13, a student in Junior High School.

■ ■

Piske Made Vice-President of North American Co.

President J. F. Fogarty of The North American Co., New York City, has announced the appointment of Frederick H. Piske as a vice-president of the company. Mr. Piske, elected a director at the annual meeting of stockholders, has been with The North American Company for 26 years, starting as a stenographer in 1911, and becoming assistant secretary in 1917 and secretary in 1926. Mr. Piske is also vice-president of North American Edison Co., as well as a director and vice-president of North American Light & Power Company, North American Utility Securities Corp., and 60 Broadway Building Corp.

Reed Hartel was elected secretary of The North American Co. to fill the vacancy caused by Mr. Piske's promotion. Mr. Hartel has been with the company since 1926, as assistant secretary since 1928. He is also secretary of North American Edison Co. and North American Light & Power Co.

William C. Heise was appointed assistant secretary of The North American Co. to succeed Mr. Hartel and Frank H. Schneider was appointed assistant treasurer of The North American Co. Mr. Heise has been with the company 16 years and Mr. Schneider 11 years.

■ ■

Indiana Municipal Utilities Must Pay Taxes

Municipal utilities in Indiana that are used for commercial purposes must pay state and county taxes, as a result of a decision of the Indiana Supreme Court declaring a tax law passed in 1933 constitutional.

Approximately 10 per cent of the 266 municipal utilities in the state complied with the law requiring them to pay state and county taxes. The remainder held the tax money in escrow until the law's constitutionality had been decided by the Supreme Court.

Sales, Conservation Topics At Kansas City Meeting

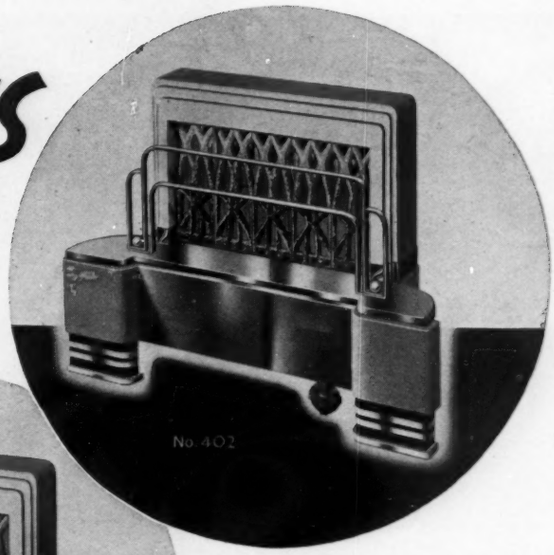
(Continued from Page 22)

Ohio Fuel Gas Co., and S. C. Preston, the Peoples Natural Gas Co. Another paper on "Recent Developments in Gas Compression Machinery," presented by Clark Brothers, consisted of a sound film describing several installations of compression machinery. This was followed by discussions by George T. Koch, Panhandle Eastern Pipe Line Co., H. J. Carson, Northern Natural Gas Co. and John Rogers. H. C. Lehn of Worthington Pump and Machinery Co. also presented a paper on the same subject. B. M. Laulhere, Southern California Gas Co., read B. C. Thiel's (Cooper-Bessemer Co.) paper on the subject. See page 30.)

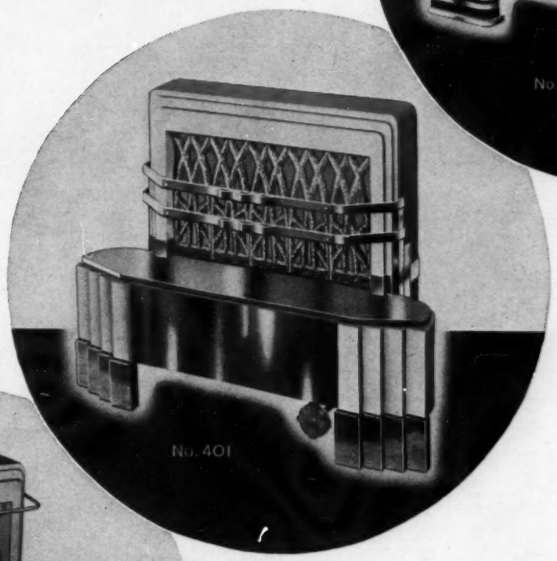
The Industrial Gas Conference committee, under Chairman Hale A. Clark, heard "Specialized Selling of Natural Gas" by Henry O. Loebell, Natural Gas Pipeline Co. of America, which was followed by discussions by D. W. Chapman, The Peoples Gas, Light & Coke Co., E. R. Rothert, Cincinnati Gas and Electric Co., F. M. Chelf, Public Service Co. of Colorado, and O. S. Hubbard, Eclipse Fuel Engineering Co. "Natural Gas in the Heavy Heating Industries" by C. L. Brockschmidt, Mississippi River Fuel Corp., was discussed by T. E. Wood, The Manufacturers Light and Heat Co., Karl Emmerling, The East Ohio Gas Co., E. P. Kramer, Atlanta Gas Light Co., J. P. Gumz, Pacific Gas and Electric Co., and W. O. Owen, Surface Combustion Corp. "Gas Engine Selection and Applications" by E. J. Hatzenbuehler, Lone Star Gas Co., and a paper by W. G. Durant, Lycoming Manufacturing Co., were discussed by Dwight Edwards, Oklahoma Natural Gas Co., W. J. MacIntyre, Arkansas Louisiana Gas Co., and Edwin Snook, Amarillo Gas Co. "Increasing Efficiencies of Gas Power Boilers" by L. H. Hungate, Jr., Memphis Power and Light Co., was discussed by L. S. Reagan, Webster Engineering Co., and F. S. Kelly, Arkansas Louisiana Gas Co.

Climax of the convention was the Friday morning general session. Major Strickler introduced Barbara Jenkins, six year old cooking wonder of Denver who demonstrated by preparing on the stage a number of tempting dishes, how simple and easy is gas cookery. The Mystery Chef closed the convention with his inspirational address, Gas Still Stands Unchallenged."

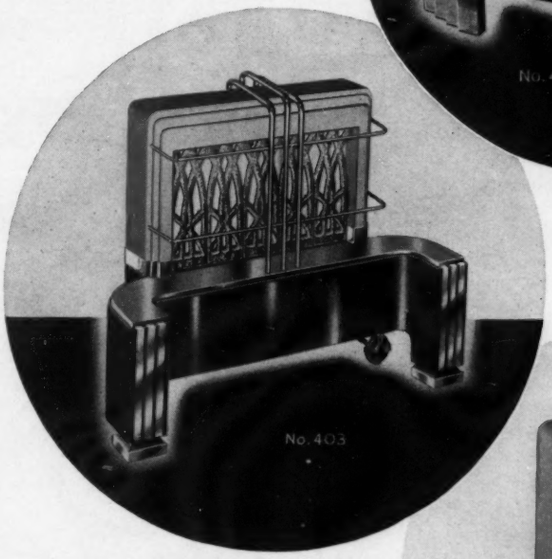
HUMPHREY RADIANTFIRES FOR 1937



Strikingly modern with every line and form blended harmoniously — refinement and good taste in color combinations and materials—prices that will surprise even owners of modest homes—these new Humphrey Radiantfires for 1937 have everything you need to build loads to a new peak this season.

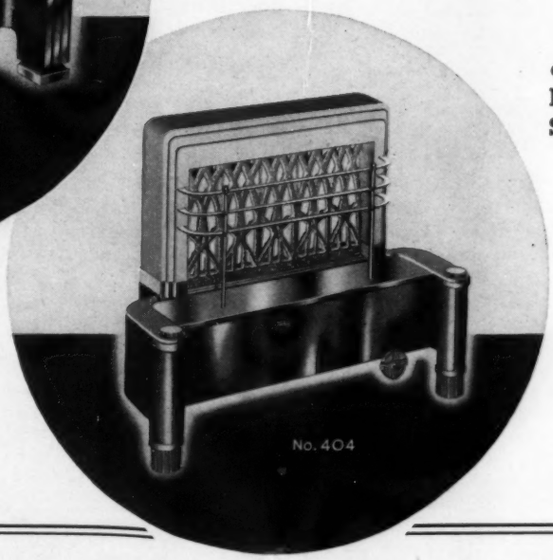


The business trend is steadily upward—new buying power has opened a tremendous market — we anticipate greater Radiantfire campaigning this Fall than in many years as gas companies in all sections prepare to take full advantage of the situation.



NOTE: All of these new Radiantfire models are available in 5, 6, and 7 double radiant sizes.

Our new 1937 Catalog and New Merchandising Portfolio are now ready. Send for your copies.



Gas men look to General Gas Light Company for style and quality leadership. We believe these distinctive new Radiantfires will again set the pace for radiant heater sales throughout America.

A HUMPHREY PRODUCT

GENERAL GAS LIGHT COMPANY

KALAMAZOO, MICHIGAN

EASTERN OFFICE
23 WARREN ST., NEW YORK CITY

WESTERN OFFICE
475 ELEVENTH ST., SAN FRANCISCO

Representatives of Texas women's organizations watch President L. B. Denning of the Lone Star Gas System sign over the former Hall of Religion of the Texas Centennial to the women of Texas. The building will be known as the Pan American Hostess House of the Greater Texas and Pan American Exposition, June 12 to Oct. 31.

DALLAS GAS CO. BUILDS PLANT TO SERVE TEXAS EXPOSITION

A complete gas distribution plant has been built by the Dallas Gas Co., Dallas, Texas, on the 200-acre municipal park in Dallas where the Greater Texas and Pan-American Exposition will be presented from June 12 to October 31.

The distribution system, sufficient to serve a small city, includes five separate tie-ins to the regular city gas distribution system, assuring uninterrupted gas service during the fair.

High pressure mains of the Dallas Gas Co. enter the grounds through two regulators, which reduce the pressure at these points to the four or five pounds carried on the Exposition main lines. Low pressure pipe lines enter the grounds at three different points, pressures being held at three and four ounces through the district regulators of the regular city system which surrounds the Exposition.

The Lone Star Gas system, through President L. B. Denning, has signed over the former Hall of Religion of the Texas Centennial to the women of Texas as a hospitality center. The building will be known at the exposition as the Pan-American Hostess House.

The exposition, called a "magic city lifted out of the past," will include a million dollar Pan-American Palace a block long, a Latin-American Village, a federal building, oil and natural gas buildings.

Arkansas Louisiana Co. Gives New Post to W. J. MacIntyre

W. J. MacIntyre, new business manager and industrial manager of the Arkansas Louisiana Gas Co. since 1929, has been appointed manager of the company in Shreveport, North Louisiana, East Texas and Texarkana, according to announcement by D. W. Harris, vice-president and general manager.

Mr. MacIntyre, who attended the Stevens Institute of Technology and was graduated from the University of Colorado with a degree in mechanical engineering, was associated with the Public Service Co. of Colorado at Denver, and the Cheyenne Fuel and Light Co., Cheyenne, Wyo., before his present affiliation. He was sales supervisor for the Cheyenne company at Fort Collins, Colo.

Owens Is Brooklyn Union New Business Manager

George F. B. Owens has been named by The Brooklyn Union Gas Co., Brooklyn, N. Y., as manager of the new business department. He has been acting manager since the promotion of Hugh H. Cuthrell to assistant vice-president and then vice-president of the company. Mr. Owens, who joined the company in 1930, was domestic sales manager for more than 5 years.

■ ■

Natural Gas Replaces Coal

Natural gas is replacing coal for fuel at the city water plant, El Reno, Okla., following decision of the city council. Oklahoma Natural Gas Co. supplies the gas.

El Paso Natural Building 75 Miles of Lateral Lines

Seventy-five and one-half miles of pipe line construction is under way for the El Paso Natural Gas Co. They constitute three laterals and will be used chiefly to supply natural gas to copper refineries.

A 6-inch line will run 8½ miles to the Chino mines of the Nevada Consolidated Copper Corp., at Hurley, N. M., from the existing 5-inch line near Whitewater. The gas will be used to develop electric energy, now produced by a plant fired by coal.

Another line of 6-inch pipe will extend 46 miles from the main 10-in. line near Redrock, Ariz., to Hayden, Ariz. This line will supply gas principally to the Nevada Consolidated Copper Corp. and the American Smelting and Refining Co.

The third lateral will be a 21-mile 4-inch line from the 12-inch main line near Lordsburg, N. M., to supply domestic gas in Lordsburg.

All lines will be oxy-acetylene welded by Lindeweld method.

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Kansas City Gas Co. Appoints Mary House to Home Service

Miss Mary House has been named home service director of the Kansas City Gas Co. For a year she has been home service director of The Gas Service Co. at Wichita. Before that she taught home economics in high schools and was head of the home service department of the Kansas Electric Power Co.

Miss House succeeds Mrs. Dorothy Clock-Diggle who resigned to join her husband, Harold Diggle, who is ill in California. Mr. Diggle was connected with the sales department of The Kansas City Gas Co. and other properties until his illness.

Miss Myrtle Horne of the home service department of The Gas Service Co., has been appointed to the position formerly held by Miss House.

■ ■

Russell D. Wells Dies

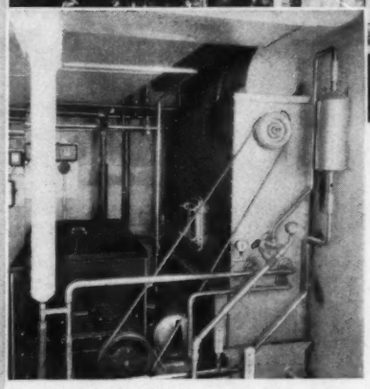
Russell D. Wells, for several years president of Floyd-Wells Co., Royersford, Pa., manufacturers of gas ranges, died in Philadelphia on April 7. He was a graduate of the Massachusetts Institute of Technology, and a member of the executive council of the Institute of Cooking and Heating Appliance Manufacturers which prepared a code of fair competition for the industry. He was also a member of the Institute's board.

■ ■

Mountain Fuel Constructs Line

Mountain Fuel Supply Co., Rock Springs, Wyo., late in May started construction of a 21-mile 10-inch lateral pipe line from Clay Basin to the South Baxter Basin, Sweetwater County, Wyo., where it will join the main line to Salt Lake City, Utah.

SUMMERS ARE *Hot* IN WICHITA, KANSAS, *but*



. . . A *Gas Powered* WAUKESHA ICE ENGINE KEEPS THIS HOME *Cool*

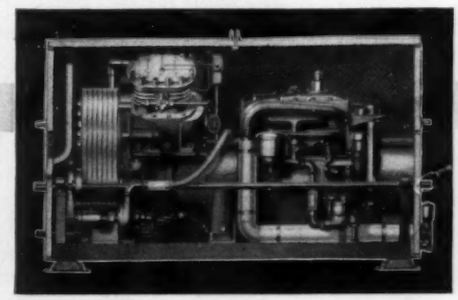
Wichita's hot, blistering summer days will not oppress the owner of this modern home. He will be enjoying cool, dry air as invigorating as an ocean breeze. His home is air conditioned with gas!

Ideal comfort cooling is assured in this home by the Waukesha Ice Engine Unit. Gas powered . . . quiet . . . dependable . . . thermostatically controlled—it gives every advantage of mechanical refrigeration at about one-fourth the cost of electricity.

First developed to meet the most exacting requirements of railway passenger car air conditioning—the Waukesha Ice Engine has convincingly demonstrated its effectiveness in thousands of miles of railway service.

It is a fully-automatic engine-driven unit of 7-tons capacity. Simple, compact, enclosed in a sound-silenced cabinet, it is readily adaptable to practically all types of air conditioning equipment. Thus it is particularly suited for residential and commercial applications. Write for Bulletin 1015.

Waukesha also makes three sizes of Deluxe Automatic Gas Engine Power Units, 10 hp. to 87 hp., for operating pumps, blowers, ventilation fans, air and refrigeration compressors and electric generators. Write for Bulletin 1048.



Standard 7-ton Waukesha Ice Engine Unit

Refrigeration Division

WAUKESHA MOTOR COMPANY

WAUKESHA, WISCONSIN

H. C. WOLF

L. C. HEAVNER

D. H. MITCHELL

H. C. WOLF ELECTED PRESIDENT AT RECORD INDIANA MEETING

H. CARL WOLF, president, Central Indiana Gas Co., Muncie, was elected president of the Indiana Gas Association in the closing session of the twenty-seventh annual convention of the Association held in Muncie on April 28 and 29. He succeeds L. C. Heavner of the Northern Indiana Public Service Co., Ft. Wayne.

Other officers elected with Mr. Wolf were Dean H. Mitchell, Northern Indiana Public Service Co., Hammond, vice-president, and Paul A. McLeod, Public Service Co. of Indiana, Newcastle, secretary-treasurer. Mr. McLeod has served in this position since 1931. Directors elected were E. C. Weston, Indiana Gas Utilities, Terre Haute; Herman G. Horstman, Public Service Co. of Indiana, Indianapolis; E. G. Peabody, Central Indiana Gas Co., Muncie; L. B. Smith, Northern Indiana Fuel & Light Co., Auburn.

The conference drew an all-time record in attendance. There were 255 registrations, with 276 persons attending the annual banquet. Last year's registration was 210, the association's best until this year's convention.

Herman Russell, president of the American Gas Association, was presented as the principal speaker of the two-day meeting. The title of his address was "Economics of the Domestic Load and Consumer Research." His paper, designed to direct attention to the need for a well-planned research and sales program, will be published in *GAS*. Mr. Russell was assisted in the presentation by R. E. Ginna, rate statistician of Rochester Gas & Electric Co., of which company Mr. Russell is president.

At the opening session L. C. Heavner, president, spoke of the serious competition with which the industry is faced, and suggested that the way out was through a vigorous campaign of advertising, aggressive sales education, and research.

The program for the two-day convention was carried through practically as published in advance in the April issue of *GAS*. The symposium on unaccounted-for gas was conducted by Phillip Rector, Central Indiana Gas Co., Muncie, instead of by J. M. Pickford, Northern Indiana Public Service Co., originally scheduled to present the symposium. Symposium speakers not listed on the advance program were W. E. Nichols, Hammond, and J. A. Messenger, Philadelphia.

"Unaccounted-for gas in the state of Indiana amounted to a half-million in 1936 as a conservative estimate," Mr. Rector said. He recommended co-operative effort, experimental work, and research to curtail unaccounted-for gas.

C. K. Graham, in addition to the speakers previously announced, talked on the part of the program devoted to "Rehabilitating Flooded Gas Properties."

E. A. Brachat was an additional speaker on the employee education program.

W. R. Fargo of South Bend, Miss Claribel McLeod, Muncie, C. K. Graham, Evansville, and Miss Marian Schleicher, Indianapolis, were called on to respond to the paper by Miss Dorothy Shank, director of Research Kitchen, American Stove Co., Cleveland, entitled, "My Conception of Home Service."

L. A. Kirch of Indianapolis brought the report of the Technical Committee; C. H. Lekberg, Hammond, the report of the Industrial Committee; Ed Ault, the report of the Accounting Committee. The latter was read by G. S. Wagner of Mr. Ault's company. J. M. Krappe, Purdue University, reported on gas research work.

Many gas men remained in Muncie for the meeting of the Midwest section of the Industrial Gas Sales Council, held the day following the convention. L. R. Foote, industrial engineer of Central Illinois Electric and Gas Co., Rockford, was chairman of the meeting. F. T. Rainey of Ohio Fuel Gas Co., Columbus, made one of the principal talks, speaking on "Power Generation with Natural Gas." Inspection tours of industrial plants were held during the afternoon of the meeting.

Officers of the Midwest Industrial Gas Sales Council for 1937-38 are L. R. Foote, chairman; Arthur E. Huegel, Milwaukee Gas Light Co., Milwaukee, Wis., vice-chairman; Nathan Schofer, Illinois Northern Utilities Co., Dixon, Ill., secretary-treasurer.

■ ■

C. C. Smith Elected President of Missouri Utilities Group

CHESTER C. Smith, vice-president of the Kansas City Power and Light Co., Kansas City, Mo. was elected president of the Missouri Association of Public Utilities at its annual convention April 21, 22 and 23 in Excelsior Springs, Mo. He succeeds C. E. Michel, vice-president of the Union Electric Light and Power Co., St. Louis, Mo., who has served as president two years.

Other officers elected were: First Vice-President, E. H. Lewis, St. Louis County Gas Co., Webster Groves, Mo.; second vice-president, Ben C. Adams, Gas Service Co., Kansas City, Mo.; third vice-president, O. F. Funk, Union Electric Light and Power Co., St. Louis, Mo.; secretary, N. R. Beagle, Missouri Power and Light Co., Jefferson City, Mo.; treasurer, Hermann Spoehrer, Union Electric Light and Power Co., St. Louis, Mo.; assistant secretary, Jesse Blythe, Jefferson City, Mo.; managing director, E. A. Beer, Jefferson City, Mo.

A state speaking contest was held on the evening of April 21 at which employees of all member companies were eligible. The place and date of holding the next annual convention will be selected by the Executive Committee at its meeting in September.

■ ■

Haug Gets Longstreth Medal

John S. Haug, consulting gas engineer, United Engineers and Constructors, Inc., Philadelphia, Pa., was awarded the Edward Longstreth Medal of The Franklin Institute, "in consideration of the invention and development of an improved type of mechanically clinkered water gas generator." The medal was presented at the Institute's Medal Day exercises, May 19, in Philadelphia.

The Differential IS CUT IN HALF

ON THE NEW KLIXON ALL-GAS THERMOSTATS

Quicker RESPONSE means better Control for your heaters

Now your heaters can have a **gas-actuated** thermostat that has the same response to temperature changes as the best snap-acting electric thermostat. For the greatly reduced differential on the new Klixon all-gas thermostats provides more "straight-line" temperature control—more uniform heat—than ever before. You get—with an all gas thermostat—the type of performance that customers want when they buy.

Operated by the Spencer Disc—a simple thermostatic disc that snaps "on" and "off," opening or closing bleeder and main valves—you get more positive, more dependable control than with the more complicated thermostats. Vibration cannot affect the thermostat. It causes no radio noises. And because of the simplicity of the disc—which replaces all toggles, magnets, bellows or other complicated parts—it is the smallest, most compact, thermostat you can buy.

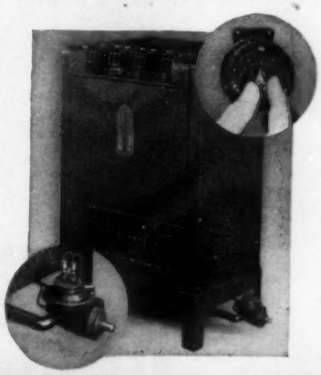
Klixon thermostats are unusually attractive, low in cost, and easy to install. You can use them for remote control or, mounted on the diaphragm valve, for integral control. Write for full information.

A Full Line of All Gas Controls

No matter what your control problem is, Klixon has the answer. For in addition to a full line of all-gas thermostats—wall thermostats, deluxe wall thermostats in many attractive finishes, diaphragm valve thermostats—Klixon manufactures a complete line of automatic pilot valves that give positive performance under all conditions.

Also available—a full line of Klixon electric controls. Write.

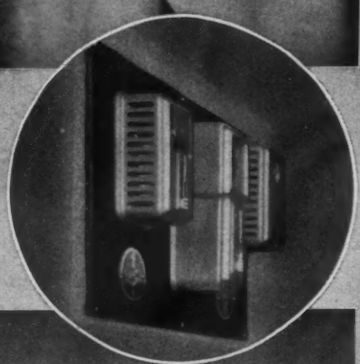
Controls That Gas Companies Can Service Themselves . . .



Gas companies prefer Klixon gas-actuated thermostats. For they can service these thermostats with their own organization. There is no electric wiring. Nothing that requires an electrician's work—either on installations or service.

SPENCER THERMOSTAT COMPANY **KLIXON** TRADE MARK REG U.S. PAT OFF ATTLEBORO, MASS.

As Modern as It's Controls



OFFICE OF DR. LEO M. SHANLEY, CLAYTON, MISSOURI . . . YEAR ROUND AIR CONDITIONING COMPLETELY CONTROLLED BY MINNEAPOLIS-HONEYWELL

MODERN heating and air conditioning demands modern controls. The Minneapolis-Honeywell system controlling the gas fired heating plant and year round Air Conditioning system in the office of Dr. Leo M. Shanley is as modern as the building itself. Whether you sell and install year round air conditioning or merely gas heating, there is a Minneapolis-Honeywell system to exactly meet your requirements—a system that will assure users the greatest possible satisfaction with gas heat . . . Minneapolis-Honeywell Regulator Co., 401 East 28th St., Minneapolis, Minn. Branch and distributing offices in all principal cities.

Dependable controls cost less than service

AUTOMATIC CONTROLS MH

MINNEAPOLIS HONEYWELL

BROWN INDUSTRIAL INSTRUMENTS • NATIONAL PNEUMATIC CONTROLS CONTROL SYSTEMS

Michigan Association Sets Program Schedule

PROGRAM plans for the meeting of the Michigan Gas Association Convention to be held at the Grand Hotel, Mackinac Island, Mich., July 1, 2, and 3 have been announced by A. G. Schroeder, secretary-treasurer for the association. A schedule of convention events follows:

JULY 1

Joint session with Michigan Electric Light Association. Principal speaker will be Walter C. Beckjord, vice-president and general manager of Columbia Gas & Electric Corp., New York.

JULY 2

Address of Newell E. Loomis, president of Michigan Gas Association.

Reports on Gas Fellowship at University of Michigan, Ann Arbor. J. W. Batten, chairman Technical Committee. Professor Alfred H. White, director of Research Work.

"Acceptance and Metering of Natural Gas"—William Frazer, Detroit City Gas Co., Detroit, Mich.

"Production of High B.t.u., Gas"—George Bently, Detroit City Gas Co., Detroit, Mich.

"Introduction of Natural Gas to Industrial Plants"—William Johnson, Detroit City Gas Co., Detroit, Mich.

JULY 3

"The National Advertising Campaign"—Clayton G. Cassidy, advertising manager, Peoples Gas Light & Coke Co., Chicago, Ill.

"The National Gas Range Campaign and Michigan"—L. W. Johnson, chairman National Gas Range Committee, Chicago, Ill.

"The National Refrigeration Campaign"—George S. Jones, Jr., vice-president and general sales manager, Servel Electrolux Corp., Evansville, Ind.

"The Golden Faucet Automatic Gas Water Heater Campaign"—R. E. Williams, chairman, Binghamton, New York.

■ ■

Canadian Gas Group to Meet In Ottawa, June 10-11

Sales development will have special attention at the thirtieth annual convention of the Canadian Gas Association, to be held at Ottawa, Canada, June 10-11. Numerous technical papers will also be presented. The advance announcement lists the following:

"Is Our Domestic Heating Load in Danger?"—E. F. McGarvey, Edmonton, Alta.

"Gas Holder Heating at Quebec"—C. W. Delorey, Quebec.

"Inspection for Explosives in Ottawa"—W. F. M. Bryce, Dr. J. S. G. Shotwell, and D. Macintyre, Ottawa.

"Selling the Approval Idea to the Gas Industry"—R. M. Conner, Cleveland, Ohio.

"Practical Advertising and Selling in the Gas Business"—G. W. Allen, Toronto.

"Cincinnati Gas Works Under Flood Conditions"—E. A. Munyan, Cincinnati, Ohio.

"House Heating Sales and Installations"—M. L. Kane, Chatham, Ontario.

Visitors will inspect the vertical coal and coke plant of the Ottawa Gas Co. during the convention.

■ ■

C. E. Kohlhepp is Wisconsin Utilities Association Head

C. E. Kohlhepp, vice-president and treasurer, Wisconsin Public Service Corp., has been elected president of the Wisconsin Utilities Association for the fiscal year beginning May 1.

Mr. Kohlhepp has been a member of the Association since its organization in 1922, was the first chairman of the Accounting Section, and since 1933 has been treasurer of the Association. He is also chairman of the Accounting Section, Edison Electric Institute.

Other officers elected for the fiscal year are: Bruno Rahn, Milwaukee Gas Light Co., vice-president; Henry Dropp, Milwaukee Gas Light Co., treasurer. R. M. Hougher, Wisconsin Hydro Electric Co., was elected chairman of the General Section, and Howard Cooper, Wisconsin Power and Light Co., was named vice-chairman.

■ ■

New York-New Jersey Sales Groups Meet June 10-11

The New York-New Jersey Regional Gas Sales Conference, sponsored by the Commercial Section of the American Gas Association, will be held June 10 and 11 at the Westchester Country Club, Rye, N. Y.

B. A. Seiple, Jersey Central Power and Light Co., Asbury, N. J., chairman of the regional council, and William J. Schmidt, Long Island Lighting Co., vice-chairman, are arranging the program.

During a panel discussion on June 11, Hugh H. Cuthrell, vice-president, The Brooklyn Union Gas Co., will conduct a cross-examination of sales managers.

■ ■

Smith Named Empire State Association Secretary

George H. Smith, for 10 years gas and electrical engineer for the Empire State Gas and Electric Association, has been appointed secretary of the Association. He succeeds C. H. B. Chapin, who has resigned.

Mr. Smith, a graduate of New York University, for 15 years was associated with the Central Hudson Gas and Electric Corp., advancing to the post of chief gas engineer and assistant electrical engineer.

■ ■

Fred Kullman Transferred

Fred Kullman, who has been superintendent of the Ohio Fuel Gas Co., Shawnee, Ohio, for several years, is now at Athens. James Steele Logan, Ohio, succeeds Mr. Kullman at Shawnee.

T. E. Roach Named P.C.G.A. General Chairman

THOMAS E. ROACH, vice-president and general manager of the Washington Gas and Electric Co., Tacoma, Wash., will be the General Chairman of the Convention Committee for the Pacific Coast Gas Association meeting to be held in Seattle, August 17-19, according to an announcement made last month by James F. Pollard, P. C. C. A. president. Hostesses at the convention will be Mrs. James F. Pollard and Mrs. Thomas E. Roach.

T. E. ROACH

Mr. Roach has retained as lieutenants the following: E. J. Ludeman, entertainment; J. Wilson Gaw, banquet; L. H. Steele, reception, attendance and properties; Chauncey H. Smith, hotel accommodations; Hyrum Crofts, registration; Frank Cadman, convention newspaper; Warren E. Kraft, publicity; R. W. Coblentz, golf tournament; and L. S. Davis, transportation.

At the present time the association's officers, directors, and section chairman, committee chairmen, and members are completing assignments in the development of a convention program which will reflect the accelerating tempo of the industry.

■ ■

Pennsylvania Gas Association Elects Christman President

Howard S. Christman, sales manager, Philadelphia Gas Works Co., Philadelphia, Pa., was elected president of the Pennsylvania Gas Association at its twenty-ninth annual convention at Skytop, Pa., May 4-6.

Other officers elected at the convention, one of the best in years, were E. S. Mensch, Williamsport, first vice-president; L. B. Eichengreen, Philadelphia, second vice-president; M. A. Boylan, Scranton, third vice-president; F. W. Lesley, York, secretary; W. G. Sterrett, Philadelphia, treasurer.

■ ■

New England Group Acquires Plymouth Gas Light Co.

Controlling interest in Plymouth Gas Light Co. has been acquired by the New England Gas and Electric Association, with approval of the Securities and Exchange Commission.

Consummated by an exchange with the Massachusetts Utilities Associates, subsidiary of New England Power Association, the deal is claimed as the first under the Public Utility Act of 1935, encouraging property groupings "geographically and economically integrated."

SALES SLANTS

A month by month presentation of experiences on the sales front.

TRAINING AS ESSENTIAL TO A SALESMAN AS TO A DOCTOR

LET us call him John Thomason because we don't know his real name. He was just one of those acquaintances you make while sitting at a lunch counter, or enjoying a good cigar in the smoker, or lounging in a hotel lobby. Perhaps his name isn't important, but we believe the thoughts he expressed are. His conversation turned to selling and it ran something like this:

"Selling is a highly paid profession for those who succeed and, because of the high pay, it attracts many men. Most of these men are young, just starting out to win their way in life. As a rule they have no other assets than good health, a more or less complete education and a desire to be successful.

"Few of these men succeed, not because they are unfitted for the selling profession, although that is sometimes the cause. They fail more often because they become impatient and discouraged after a short try.

"Let us turn for a moment to other professions—law and medicine. The average man who decides to become a lawyer or doctor has no better qualification for his chosen profession at the start than a salesman for his. He knows from the beginning that he must go through years of training, wade through arduous collegiate courses before he gains the right even to hang out his shingle. After he is ready to enter the profession, he knows that it will take many more years to build up a good practice. How foolish he would be to give up after the first week, or month, or several months, because patients or clients were not streaming into his office.

"Too many of the men who decide to enter the lucrative field of selling expect to strike gold right from the start. It just can't be done. The business is just as much of a specialty as law or medicine and the man must be trained for it.

"It is largely the sales manager's fault when a man gives up after a short try, because that sales manager has considered the training question too lightly. He has failed to convince his would-be-salesman that he needs to be trained for the selling profession as he would have to be trained for any other.

"In my opinion, selling as a vocation has many advantages over law or medicine. It takes a number of years and many dollars spent in training before a doctor or lawyer is earning money. And the average income of these professional men is not over $3,500 a year.

"A salesman can begin to earn at once and after the initial training period, which is comparatively short, he is qualified to earn more than $3,500 a year.

"Gas appliance selling is among the most dignified and honorable of vocations. If sales managers are to keep it that way and get their share of the business that can be had, they must give more time and thought to the problem of equipping their men to sell."

A SALESMAN—LIKE A SPEAKER—HAS A CRITICAL AUDIENCE

SELDOM does a speaker whose position is one of great influence address an audience without careful preparation.

He is well aware that his lightest thought, if not carefully phrased and properly tuned to his listeners' desires, can mean disaster for him. He knows that his audience will weigh his every utterance. To hold their confidence and respect, to keep unimpaired his reputation as a leader, will depend largely upon his sincerity.

Not only must he be thoroughly informed on his subject, but he must have a convincing and straightforward delivery, because whether he gets across his idea or does not get it across will depend to a certain extent upon each individual word he speaks, as well as upon the manner in which he speaks it.

To phrase it another way, he must be a good salesman with a well thought-out presentation.

The principal distinction between a salesman and a man who addresses a gathering is that the salesman's audience is usually limited to one person. Certainly the salesman's obligation to know his subject thoroughly as it affects his listener's needs and desires and to be able to tell about it with obvious sincerity and directness is no different from the speaker's.

The average housewife is a shrewd buyer. She never takes a salesman's word lightly. Instead, she weighs it carefully. Many a salesman has lost out because he failed to consider that his words were of enough importance to deserve careful thought before he delivered them.

Just as an audience will detect a loose statement from a speaker, sometimes answering it with a "Bronx Cheer," one of the best things a housewife does is to spot an insincere remark made by a salesman.

The unfortunate thing, however, is that the housewife seldom indicates her doubt and the salesman moves merrily along until he is knocked down with a battery of "no's."

A salesman's sincerity is born of knowledge of his product and assurance that he is contributing something the housewife urgently needs and will profit from.

A presentation of the gas appliance story, based upon such sincerity and organized with only a portion of the care a speaker takes in preparing his speech, will invariably win the admiration and respect of the housewife and, most important, an increasing volume of sales.

Plans Laid for Second Year Of National Advertising

AT a meeting of the Committee to Conduct National Advertising, held at American Gas Association headquarters, New York, with Major T. J. Strickler, chairman, presiding, tentative plans were approved for a second year of the present national advertising program to cover the period September 1, 1937, to August 31, 1938.

Final plans were to be submitted for approval to the Committee at a meeting to be held in the Palmer House, Chicago, May 27. It is proposed to start the second year's program with the initial ads appearing in September, 1937 issues of national magazines.

McCann-Erickson, Inc., of New York, will handle the domestic gas phase of the program and Ketchum, MacLeod & Grove, Inc., of Pittsburgh, will handle the industrial gas end. The appropriation for industrial gas advertising will again be $30,000, and the allocation for domestic gas advertising will be approximately $400,000.

Letters were presented at the New York meeting which had been received by President Herman Russell, commenting on the first year's activities. These letters were all complimentary in character, and many of the writers expressed the hope that the appropriation for national advertising could be increased materially so that the Committee could enlarge its list of media and do a bigger job.

■ ■

Women Buy Ranges for Looks, Chicago Survey Shows

"Why Women Buy Modern Gas Ranges," issued by the Commercial Section of the American Gas Association as Interim Bulletin No. 34, covers studies originally made for The Peoples Gas Light and Coke Co., Chicago, under the direction of L. W. Johnson, domestic sales manager, and Clayton G. Cassidy, advertising manager.

The study showed that of the 282 women whose answers to queries were pertinent, practically 97 per cent purchased new modern automatic gas ranges either because of an urge to modernize their kitchen because of the dictates of fashion or because of replacement necessity. At the time of the purchase, the report states, less than 5 per cent of the women who sent replies had little idea that the modern automatic gas range cooks food better than the old ranges.

The conclusion was reached by those in charge of the study that if women were familiar with the operating advantages of modern automatic gas ranges, resistance to gas range sales would be greatly reduced.

■ ■

Appliance Sales Tops 500,000 On Pacific Coast in 1936

THE Pacific Coast Gas Association has released figures on gas appliances sold on the Pacific Coast during 1936. A total of 502,000 appliances were sold. The figures, which were supplied by gas utilities, are incomplete due to the difficulty of obtaining complete sales records from the numerous and widespread sales outlets. Sales were as follows:

Ranges—152,000 (About 1 per cent of this number consisted of hot plates and cookers.)

Water Heaters—122,000 (About 15 per cent of these were non-automatic.)

Central Heating Plants—20,000 (Mostly warm air furnaces including conversions.)

Space Heaters—185,000 (Approximately 50 per cent floor furnaces, 40 per cent circulators, the balance being radiant heaters, wall heaters, radiators, etc.)

Gas Refrigerators—23,000.

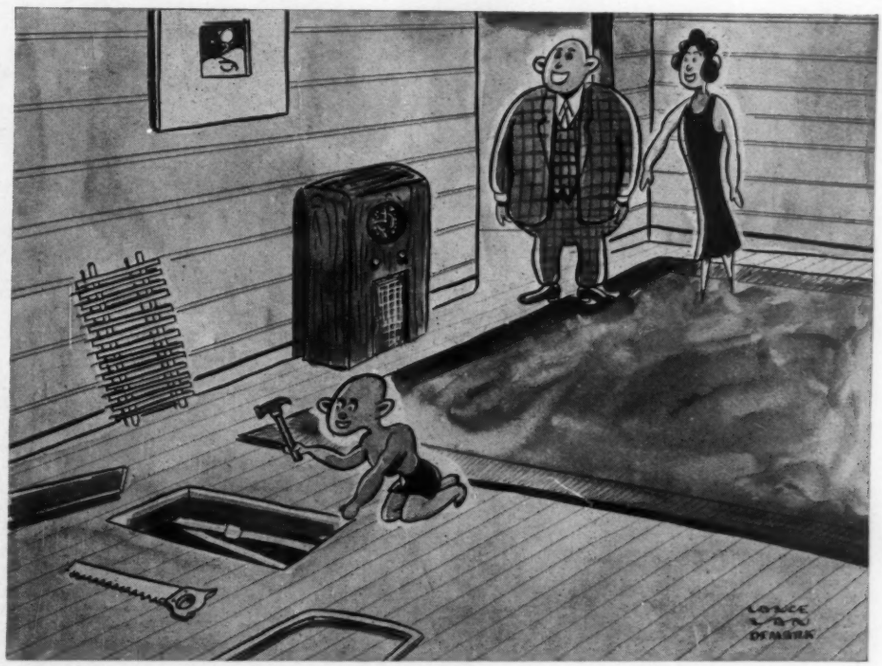
It is estimated that while well over 80 per cent of retail appliance sales in this territory are made through dealers, an inverse proportion applies to advertising, solicitation and other features of sales promotion.

Public Service Co. May-June Sales Contest Is Horse Race

Public Service Co. of Denver, Colorado, is conducting a May-June sales contest called the "Faller Sweepstakes," in which salesmen act as racehorses, supervisors act as jockeys, department heads as trainers, and various executives as owners of the stables. Each sales division is a stable, with its own colors. Throughout the sales event, weekly purses are awarded to horses, jockeys, trainers, and owners.

Prize scrip is issued in denominations of "1 buck" and "10 bucks." This scrip will be redeemable at the close of the racing season in cash. Loving cups, ribbon medallions, and other honors will be awarded the winners in addition to the scrip purses. Whips and jockey caps for those in supervisory capacities, and horses' tails and handicap weights for the laggards are used to assist in creating the racing atmosphere. A large board in the form of a race track shows the position of all stables in the race and carries the names of the leading owners, trainers, jockeys, and horses.

Weekly new business meetings are held, at which each stable is encouraged to participate in the "horse play." A weekly dope sheet is also issued. G. W. Faller, general manager, is grand master of the race, and G. B. Buck, new business manager, is starter.



"He says it should be more modern—he got the idea at the Kansas City Natural Gas Convention."

Hallet Gildersleeve Succeeds The Late Stanley Taber

HALLET GILDERSLEEVE, Lincoln, Neb., has been appointed assistant general manger in charge of merchandising for the Iowa-Nebraska Light and Power Co., according to announcement by L. R. King, president and general manager. Mr. Gildersleeve fills the position held by Stanley Taber until the latter's death.

H. GILDERSLEEVE

Mr. Gildersleeve, who has been with the Iowa-Nebraska Light and Power Co. for nine years as sales supervisor of the Lincoln district, has been in the utility field more than 20 years, first working for the LaPorte Gas and Electric Co., LaPorte, Ind., then for the Northern Indiana Gas and Electric Co. at Ft. Wayne. In 1919 he joined the Humphrey Co., Kalamazoo, Mich., and represented the firm in Iowa and Nebraska until his affiliation with the Iowa-Nebraska Light and Power Co. in 1928.

Stanley Taber, who died on March 10, had been assistant general manager in charge of sales for 12 years. He entered the utility business as stenographer in the purchasing agent's office of the Peoples Power Co., Rock Island, Ill. After the war he joined the Peoples Light Co. in Davenport, Iowa. In 1925 he was transferred to a group of properties that later became the Iowa-Nebraska Light and Power Co. and shortly thereafter he was appointed to the position he held at the time of his death. He was a director of the Midwest Gas Association.

■ ■

Consolidated Edison Ends Domestic Gas Range Sales

Consolidated Edison Co. of New York, Inc., on July 1 will discontinue the sale of domestic gas ranges, and hereafter only display, demonstrate, and take orders for gas ranges under The Co-operative Merchandising plan. Announcement was made by E. F. Jeffe, vice-president in charge of sales.

According to the Co-operative Merchandising Plan, which is designed to increase the sale of appliances by dealers, Consolidated Edison Co. takes orders for merchandise and transmits the orders to approved dealers through manufacturers without accepting any part of the purchase price of appliances sold. All financial transactions, whether on cash or deferred payment sales, are handled by the dealer who fills the order. The plan is restricted to appliance dealers of high standing and limited to the sales of standard approved appliances.

■ ■

So. Calif. Water Heater Drive Boosts Dealer Sales

WITH 313 Southern California dealers reporting the sales of 3250 units, the "Red, White, and Blue" water heater sales contest, which was conducted by the three gas companies operating in the Los Angeles area from February 22 to April 30 was successful not only from a sales viewpoint but also in accomplishing its major purpose, the stimulation of water heater sales by dealers.

During the campaign, eligible heaters (all those meeting the financing requirements of the companies) were divided into three groups. Those selling from $50.00 to $62.49 were designated with white tags (sales, 1513); those from $62.50 to $74.99 with red tags (sales, 900); and those priced over $75.00 (sales, 837) with blue tags. In competition for contest prizes, the white tags counted 10 points, the red, 15; and the blue, 20. Valuable merchandise prizes were awarded the winning dealers.

The water heaters were sold with no down payment other than sales tax, 40-month contracts on galvanized tanks, 60-months on non-ferrous tanks and instantaneous heaters, with $1.50 minimum monthly payment. Dealers were permitted to make a special allowance of five per cent of retail price on heaters replacing competitive fuel and non-automatic gas appliances. The gas companies refunded this allowance to the dealers. The gas companies and the manufacturers aided in defraying the cost of newspaper advertising.

■ ■

"Air Circus" Used in Oregon

The Oregon Gas Appliance Society, in co-operation with the Portland Gas and Coke Co., Portland, on May 15 closed a six-weeks gas range campaign. A 26-piece Pyrex set, retailing for $14.50, was given with straight ranges selling for $99.50 or more and kitchen heater ranges selling for $139.50 or more. Eight manufacturers co-operated. Salesmen's interest was stimulated by an Air Circus contest, in which a salesman advanced from a cadet (one sale) to an ace (five sales) and to a wing commander (30 sales).

Straight Rental Plan Adopted by B. C. Company

THE British Columbia Electric Railway Co. has discontinued its rental purchase plan for gas storage water heaters in favor of a straight rental plan. Rental is 50 cents a month for a 20-gallon heater and 75 cents a month for a 30-gallon heater. Rentals are restricted to domestic customers living in single family dwellings. Contracts are written for 12 months and thereafter are subject to cancellation by either party upon 10 days' notice. In rented premises the permission of the owner is required, although the contract may be made with the tenant.

Gas is served through a separate meter on a special water heating rate. This rate requires a 12 months contract. In certain outlying territory there is an additional charge of 25 cents a month meter rental. Auxiliary water heating is permitted through furnace and range coils but a separate tank must be used. No auxiliary heating can be connected directly to the gas water heater. The water heater can be purchased at any time at a valuation established by the company.

Dealers can participate in both the rental and sale of water heaters. Regular dealers securing a signed rental order receive a bonus of $5, and for a prospect later signed by the company a bonus of $3.

This rental plan runs parallel with the company's co-operative merchandising plan, offering 40 months to complete the purchase. For an outright sale a regular dealer gets a $10 bonus and for a prospect sold by the company $5. A dealer who co-operates in a sale also gets the privilege of making the installation at a flat sum of $18.

■ ■

Consolidated Edison Drive Sells 8,192 Gas Refrigerators

In a special campaign for the sale of Electrolux gas refrigerators carried on by Consolidated Edison Co. of New York, Inc., and co-operating electric appliance and plumber dealers during April, there were sold 8,192 refrigerators, according to E. F. Jeffe, vice-president in charge of sales. A feature of the campaign was a $15 allowance made for each ice box replaced. Of the total number of refrigerators sold, 7,886 were purchased under this arrangement.

The refrigerators sold in this campaign will create additional use of gas amounting to approximately $164,000 annually, it is estimated.

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Gas
"GAS APPLIANCES FOR GREATER SALES VOLUME"
—says West's largest range retailer

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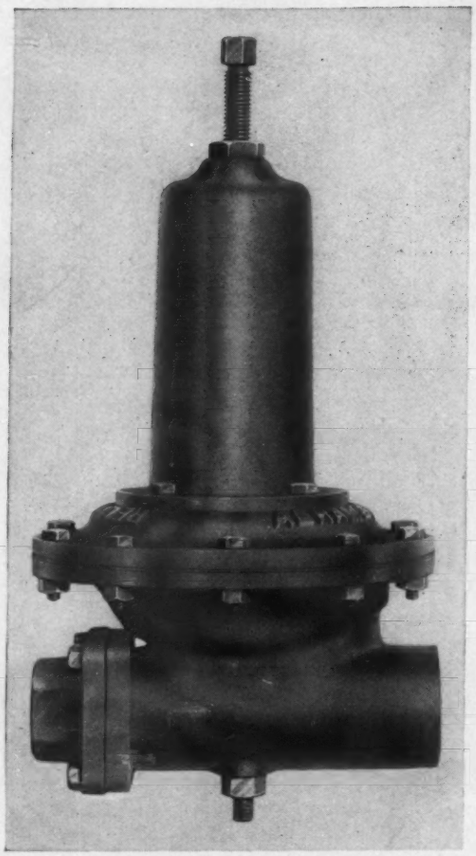
Gas



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RELIANCE REGULATORS

MEASUREMENT and CONTROL

Recording Inks . . .

By F. E. BRADLEY
Chanslor-Canfield Midway Oil Company*

IN 1890, Schluttig and Newmann, ink chemists of Dresden, Germany, wrote one of the most important books on ink. Their definition of ink is particularly good. (This is a literal translation from the German), "By ink, we mean a liquid; suitable for writing, is a clear filterable solution, not a suspension, is mobile and keeps for a considerable time, it flows easily from the pen, and neither clogs, drops off, nor spreads on the paper, has good keeping qualities in glass, a slight deposit is formed only slowly, no skin like deposit on the surface or on the walls, never any mold, on a good pen it forms only a slight varnish-like smooth coating, but not a loose crusted one, has no pronounced odor, is not too acid and does not penetrate through good paper, has an intense color which does not become paler nor bleach out entirely in the liquid or on paper."

F. E. BRADLEY

For many years the U.S. Weather Bureau has used recording ink made with a basic dye (ten grams per liter) and a mixture of equal parts of glycerine and water. This is a good antifreeze yet there are parts of the country where it would be solid in winter. To overcome this difficulty, enough alcohol is added to keep the ink fluid at any winter temperature. For indoor use a mixture of one volume of glycerine and three volumes of water has been found to make a satisfactory recording ink.

To determine the best mixture, a series of 38 inks was made by dissolving each of 19 acid, or basic dyes, in two mixtures 1-1 and 1-3 of glycerine and water. Another series of inks was made by dissolving each of 16 direct dyes in the two mixtures of glycerine and water; and a third series by dissolving the same 16 dyes in a similarly diluted ethylene glycol. All inks were tested by drawing lines on five kinds of paper, three of which were chart paper, provided with recording instruments. In the 190 tests of the 38 inks of the first series on the five papers, only 10 lines were rated as nonfeathering, with 108 slightly and 72 decidedly feathering. The proportion of water made little difference in the results.

The inks of the second and third series, made with the direct dyes, were in general greatly superior to those of the first series. The 16 direct dyes, each in four solvents, made 64 inks with which 320 lines were drawn on the five papers. Of these lines 227 were rated as nonfeathering, 48 as slightly and 45 as decidedly feathering. Further analysis shows that glycerine is better than ethylene glycol at the same dilution, and that the inks with the larger proportion of water made sharper lines than those with less water.

The inks were prepared on July 9th. On October 2nd they were inspected and it was found that some of the corks of the tubes in which the ink had been kept were moldy. When shaking the tubes to dissolve the dyes, all the corks had been wet with the inks. Of the inks made with equal volumes of glycerol and water, six contained dyes that permitted growth of mold. Three and possibly four species of mold were growing and fruiting on the corks. With the mixture of 1-3 glycerol and water, there were 13 moldy corks, and in addition, mold was growing on the surface of three of the inks. No mold could be detected on the corks that had been in contact with the inks made with ethylene glycol at either dilution.

*Presented before the Southern California Meter Association, Los Angeles, Calif., April 22, 1937.

Direct Dyes

The direct dyes used in the tests are listed in Table No. 1. To do away with confusion in the names of dyes, two important tabulations of dye names have been published. The first is Gustav Schultz's "Farbstofftabellen" (Dyestuff Tables) of which there have been several editions. The second is the "Colour Index" of the British Society of Dyers and Colourists. In each book the dyes are arranged in groups according to the type to which they belong, and are further classified according to their chemical formulas in each group. The dyes are numbered serially, so any one number applied to only one dye. Thus 707, in the color index, means a particular dye, one of the soluble blues, and nothing else. The same dye is number 539 in Schultz's book.

TABLE NO. I. DIRECT DYES USED IN TESTS

Name of Dye	Grams per liter	Color index number	Schultz number
Benzo fast scarlet	10	326	279
Congo red	7.5- 5	370	307
Orange R	10	446	362
Orange G	10	478	392
Pyrazol orange	10	653	...
Chloramine yellow	10	814	617
Chloramine Green R	10	589	470
Diamine green B	10	593	474
Diamine Sky Blue FF	5- 7.5	518	424
Benzo sky blue	10	520	426
Diamine violet N	10	394	327
Oxamine blue 4R (Erie violet 2B)	10	471	385
Bismark brown R	10	332	284
Benzamine brown 3GO	10	596	476
Columbia black FF extra	10	539	436
Direct deep black RW (Erie black RXOO)	12½-15	582	463

It will now be understood that such a symbol as C.I.707 or Sch. 539 is the most certain way of telling the seller just what kind of a dye is wanted.

The 17 direct dyes used were from the National Analine and Chemical Company.

One of the dyes, toluylene orange R, did not dissolve completely and the turbid solution showed practically no sign of clearing by settling when left undisturbed for several days. Another dye, diamine green B, set to a sort of jelly on standing over night. This became fluid when shaken and there was no difficulty in drawing the lines.

An essential part of each Federal specification for an ink is the section in which the methods of testing are described. If the specification gives a formula for a standard ink, both the sample and the standard are subject to the same tests, and as far as possible on the same sheet of paper. The chief reason for having a standard ink is to use it as a basis for comparisons in the testing, because any dissimilarity between it and the sample becomes apparent at once. If the sample is a red ink it need not match the standard in color unless it has been agreed on by our buyer and seller. However, the sample must be as satisfactory in working qualities as the standard and as fast to light. It should be examined for sediment by allowing it to stand undisturbed for 24 hours, holding it up against the light and slowly tilting the container to detect sediment at the bottom. There should be at best only traces of sediment. Very muddy ink can be rejected without making any tests, unless perhaps, it has been chilled in transit. In that case it is allowed to come to room temperature to see whether it will become clear. Light-fading tests should be made by marking on paper with the ink to be tested and exposing to direct sunlight on the outside sill of a window facing south.

In conclusion the ideal recording ink can be defined as one that will make a readable record in a v, fountain or capillary pen for one revolution of the chart, will not dry, corrode or gum up the pen and will operate over a wide range of temperatures and humidity.

Charts and Paper

Paper is composed of cellulose and is made from a mixture of cotton, linen or wood pulp. The wood is cut into chips and heated or cooked with a solution of calcium bi-sulphite. This dissolves out the lignin, which together with the cellulose makes up the solid part of its structure. The pulpy material is then washed, beaten with water to reduce its minute shreds and bleached with a very dilute solution of chlorine water. The pure cellulose, now paper pulp suspended in water, is spread on screens, drained, pressed and dried. During the processes, other substances are usually added. Thus size (glue or gelatine) prevents the ink from running; pulverized calcium sulphate (gypsum) and other white solids (loading) give body to the paper and make possible the subsequent production of a smooth surface by rolling (calendering). Colored dyes or powders are added to the pulp when special tints are required.

Definitions of terms used in speaking of paper thicknesses and quantities follow:

Point—The thickness of the paper in thousandths of an inch. Chart paper varies from 3 to 10 points.

Pound—The number of pounds a ream of paper of a unit size weighs. Bond or ledger paper measures 17 inches by 22 inches and a ream (480 sheets) may weigh 13, 16, 20, 24 pounds. Book and chart paper measures 25 by 38 inches and weighs 35, 40, 45, 50, 60, 70, 75, 80 and 100 pounds to the ream.

Ream—20 quires of paper.

Quire—24-25 sheets.

When the meter is calibrated, a chart of the required type is placed parallel with the grain of the paper at right angles to the travel of the pen. The direction of the grain of the paper can be determined by various methods. Place the chart on the palm of the hand and allow the chart to curl up, the grain of the paper is parallel to the axis of this trough. A piece of the chart about an inch square is laid upon water; in a moment or two it starts to curl up on the opposite sides, thus making a shallow trough. The axis of this trough is parallel to the long direction of the paper as it comes from the paper making machine. Although the fibres of paper seem to be arranged haphazardly, there is a definite difference in some of the properties of the sheet in two directions, one the machine direction and the other at right angles. A 10-inch chart, if wetted, will expand with the grain from 12 to 25 thousandths and the same sheet against the grain 2 to 6 thoudandths. If this same chart is dried to the original humidity the chart will be 4-8 thousandths with the grain

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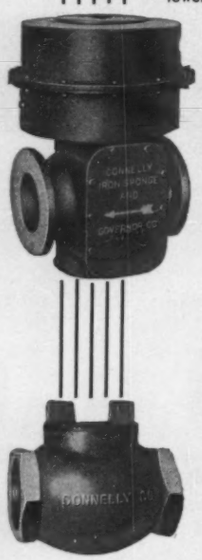

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District Regulator for line pressures up to 100 pounds in inches. Increased flexibility due to improved adjustable linkage, connecting diaphragm and valve stem. Operates perfectly under water.

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and 1/2 to 1-1/2 thousandths against the grain from its original measurement. Charts of the same kind and printed by the same company have the same direction of fibre.

An ideal chart can be defined as one that will be round, have a low expansion coefficient, well sized to prevent the ink from going through, not curl up under varying humidity conditions and absorb enough of the ink to make a legible line.

■ ■

S.C.M.A. Meeting Features Steam Measurement Paper

FEATURED at the May meeting of the Southern California Meter Association held on May 27, in Huntington Park, Calif., was a paper, "The Measurement of Steam by Orifice Meters," presented by P. W. Hill of the General Petroleum Corp., Los Angeles, Calif. Guy Corfield, of the Southern California Gas Co., president of the association, conducted the meeting.

Mr. Hill's discussion included descriptions of recent installations in steam measurement. The presentation of the paper was followed by much discussion.

Of great interest to those attending was the showing of a color motion picture, "Glimpses of the West," which included many views of the various national parks in the western states. Arvin Parrent of the Automobile Club of Southern California presented a running monologue with the film. The program was under the supervision of Robert Angell, program chairman.

Musical entertainment during the evening was presented through the courtesy of The Foxboro Co., with Dudley Hill acting as master of ceremonies.

Announcement was made by James Dunn, entertainment chairman, of the forthcoming elections to be held at the June meeting of the association. Plans have been laid for an extensive entertainment program, and members are asked to purchase tickets for the meeting immediately as attendance will be limited.

■ ■

New Meter Chart Developed

A newly developed recording meter chart for use in all cases where ordinary paper charts are destroyed after one day's use has been announced by Permo Chart Co., Koppers Building, Pittsburgh, Pa. The new chart is called "Permachart." The smooth, hard-surfaced chart, which can be cleaned by the use of a damp cloth, is made from a recently developed wrinkle-proof, waterproof, non-inflammable material. A circular is available which describes these charts in detail.

Determination of Gas Losses On High Pressure Lines

By R. O. COX

Lone Star Gas Company*

TWO general methods of determining leakage from gas pipe lines are used, the pressure-drop method and the metering-in and metering-out method. The pressure-drop method requires shutting off the lines for a period of time and is used mostly on new lines before being put in service. The metering-in and metering-out method causes no interruption in service and is the one most commonly used.

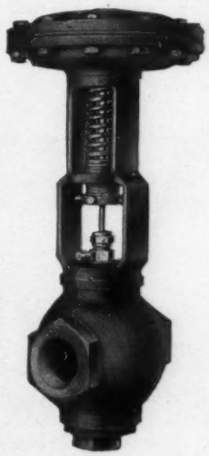
The pressure-drop method † consists merely in packing the line to a certain pressure and shutting it off. By noting the pressure drop at the end of a certain period and computing the quantity of gas in the line at the beginning and end of the period, the actual quantity of gas lost can be determined. The pressures are usually taken with a dead weight pressure gage and time must be allowed for the gas to come to a stand-still or pressures equalize in the line before readings can be used. A record of the gas temperature must also be made and used in the calculations if the results are to be accurate. The barometric pressure should be noted so as to have the correct figure for adding to the gage readings to get the absolute pressure.

The metering-in and metering-out method consists in subtracting the

* Presented before the 13th Southwestern Gas Measurement Short Course, conducted by the college of engineering, University of Oklahoma, Norman, Okla., April 20-22, 1937.

† The pressure-drop method of determining line losses was covered by E. C. Cheaney of the Cities Service Gas Co. at the 1936 Meter School. His paper is printed in the proceedings of the 1936 school.

With both Flow-Control and Pressure-Control Regulators *this valve is* APPROVED



The V-Port gradual-opening valve here shown is thoroughly dependable with flow controllers and instrument-type auxiliary-controlled pressure regulators and with many other forms of refinery equipment. Has many applications also in other industries. Made for either direct action (closed by diaphragm pressure) or indirect action (opened by diaphragm pressure). Sizes 1/2 inch up, all with ample diaphragm area to give positive unfailing response.

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V-Port Motor Valve

THE CHAPLIN-FULTON MFG. CO.

28-40 Penn Avenue Pittsburgh, Pa.

volume of gas metered out of a line from the volume measured into the line. This method is very simple, but is the one most subject to error. The difference between the gas metered in and that metered out is in reality the "unaccounted-for gas." The accuracy of the method depends on the accuracy of measurement. If any errors exist, then the actual leakage is a different figure from the amount of "unaccounted-for gas."

The following factors must be taken into account in measurement if the gas unaccounted for is to indicate actual leakage:

1. All meters must record accurately.
2. Correction must be made for flowing gas temperature.
3. Correction must be made for deviation from Boyles Law.
4. The actual specific gravity must be used in orifice meter coefficients. If the specific gravity varies to an appreciable extent, tests must be made at regular intervals or a recording gravitometer should be installed and corrections made on each day's chart total.
5. Meter charts must be read correctly.
6. All measured gas volumes must cover the same period of time.
7. All gas volumes must be converted to a common pressure base.
8. Consideration must be given to amount stored in the line. If the pressure has changed during the period in question, then the actual quantity of gas in the line has changed.
9. Volumes of gas lost in blowing lines and from line breaks must be considered.

Fulfilling all of the above requirements is sometimes impractical except for special cases where a close check is desired. They are enumerated as the most important causes of error in leakage reports. Other minor causes also affect the accuracy of the metering-in and metering-out method.

On long transmission lines it is customary to install check meters at regular intervals which has the effect of cutting the line into shorter lengths for leakage analysis. A system for accurately keeping account of new consumers and new wells tied in must be set up in the office and each must be accurately spotted on the maps in the correct leakage section.

After subtracting the amount of gas metered out of a pipe line section from the amount metered in, the total unaccounted for is obtained. If all the factors mentioned above have been compensated for, it is the actual leakage. It is then necessary to express the leakage in terms of volume lost per unit of pipe.

Pipes of different diameters are usually contained in each leakage section and it is necessary to select one standard size and convert all sizes to equivalent lengths of the standard selected. It is the usual practice to use 3-inch pipe as a standard. To convert a length of pipe of another diameter to its equivalent length of 3-inch pipe, it is only necessary to divide its diameter by 3 and multiply the quotient by its length. Since the circumference is directly proportioned to the diameter, and the pipe surface for the same length is proportioned to the circumference, the result from the above formula is in equivalent pipe surface exposed to the gas. This formula is not to be confused with that for equivalent volume.

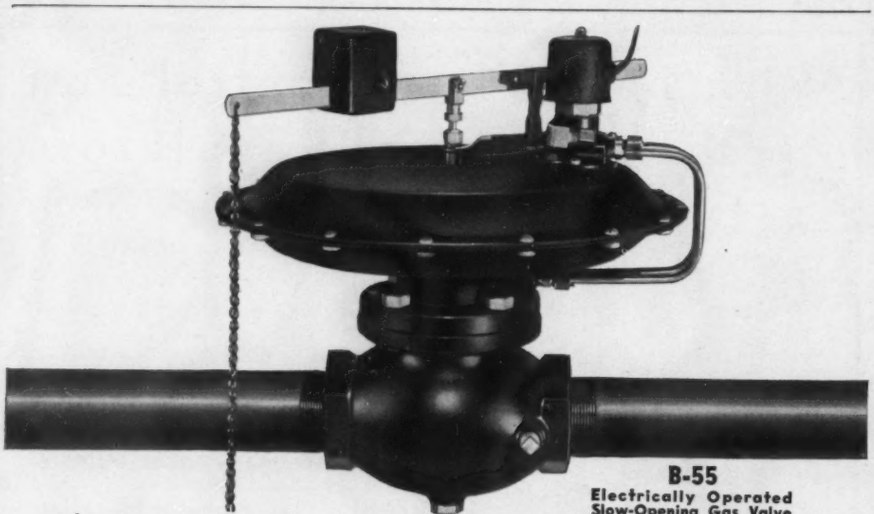
An accurate record of all pipe in each leakage section must be kept, and the number of miles of equivalent 3-inch pipe computed from that record. The total gas unaccounted for divided by the total number of miles of 3-inch equivalent pipe gives the total unaccounted for per mile of 3-inch equivalent pipe. As explained above, the result is then in terms of loss per unit area of pipe surface.

To give a more equitable comparison between lines operating under different pressures, the loss can be further reduced to that per mile of 3-inch equivalent pipe per 100 lb. pressure. The United States Bureau of Mines found by experimenting several years ago that where the pressure change was not too great, the leakage varied very nearly with the gage pressure. Therefore, the leakage at 300 lbs. would be expected to be about 50 per cent more than the amount at 200 lbs. Reducing the leakage to the amount per 100 lb. pressure would then give a better comparison between different lines operating under different pressures.

Leakage reports are usually made on a monthly basis, showing the volume, the per cent and the amount per mile of 3-inch equivalent pipe. In addition to the monthly figures, year to date and 12 months expired period figures are kept. In cases where the gas received does not cover the same period as gas delivered, the yearly figures are much more accurate. If the figures are spotted on a system map, a much better picture is presented. Curves and graphs are usually kept to show the trend of leakage figures.

From a revenue standpoint, the percentage of unaccounted-for gas is

(Continued on Page 78)



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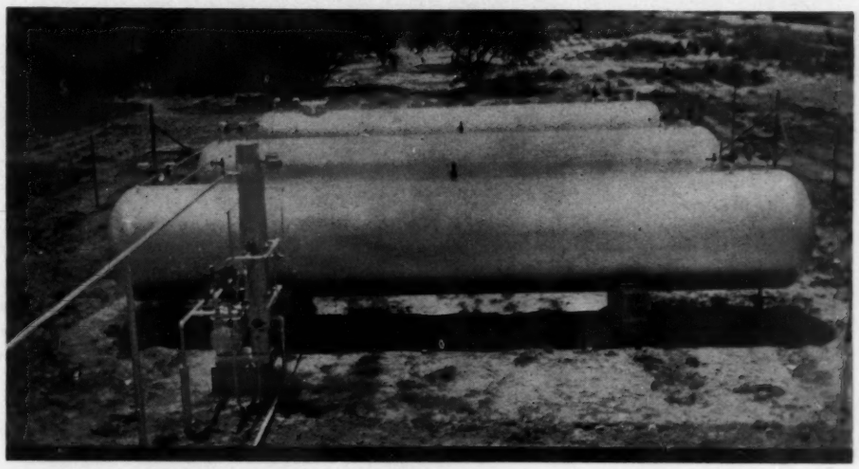
BUTANE-PROPANE NEWS



View of the three 4,000-gallon tanks used to store butane now being served as domestic fuel in Blythe, California.

Blythe, Calif., Butane Plant Installed In 31 Days

By K. C. JONES

Manager, Blythe Gas Company

WITH the plant and distribution system of the newly formed Blythe Gas Co. completed and now in operation, residents of this southeastern California city are now receiving butane service. L. R. Lackey is head of the new utility, and K. C. Jones, manager. Construction of the plant and distribution system was started March 24 and by April 23, 31 days later, the job was completed.

Evidence of the enthusiasm with which butane was welcomed by Blythe residents is the fact that 175 service connections were signed up and 20 meters were in actual operation by the time the system was completed. Gas was actually put into the mains on April 19 and service on that date was available to all of the city's business district and one-half of the residential area.

The Blythe Gas Co. opened offices on Hobson Way with a full line of ranges, water heaters and refrigerators on the floor. Approximately $1,000 worth of appliance sales were registered during the first week.

The plant has three 4,000-gallon butane storage tanks, all welded and designed for an operating pressure of 171 lbs. per sq. in. The tanks are set horizontally on concrete foundations and manifolded together so that they can receive fuel by truck or rail. The system is an undiluted butane-propane mix having a calorific value of 3,000 B.t.u. per cu. ft.

Gas is vaporized by a Parkhill-Wade vaporizer with a capacity of 2,000 cu. ft. per hour. The vaporizer utilizes the principle of pressure reduction in the vapor stage to eliminate the nuisance problem of freezing in the high pressure regulators. The pressure, under the system installed, is reduced to 13 inches of water as entering-pressure into the mains.

The water heater is located in a 10 by 20 foot building and a thermo-siphon system to the vaporizer is employed. As a safety precaution, the building housing the water heater is located 50 feet from the tanks and loading spots. In case of a rise of the liquid level in the vaporizer due to water heater failure, a float set in the vaporizer at a point two thirds up goes into operation automatically. The flow of liquid from the tanks to the vaporizer is shut off through the action of this float on a motor valve on the liquid intake line. A secondary system, described in the following paragraph, then goes into operation until such time as the attendant has an opportunity to adjust the water heater failure.

An engineering feature designed to increase safety and continuity of plant operation is a secondary system which is a direct hookup from vapors in the storage tanks to a high pressure regulator set 2 lbs. lower than the high pressure regulator from the vaporizer. In case of any possible failure in the normal circuit this regulator goes into action and provides gas for the distributing system until such time as the attendant makes his routine inspection.

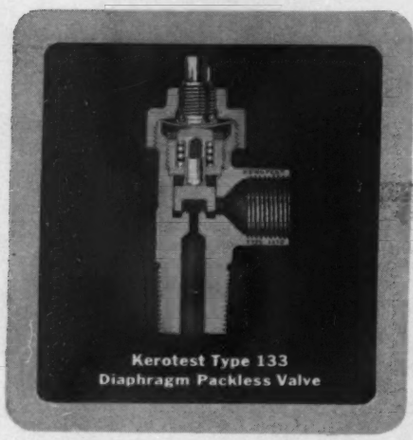
The distribution system consists of a total of 20,000 feet of pipe. A 3-inch line from the plant completely loops the business district. This loop is made up of 3- and 2-inch mains. Laterals lead off from the loop to feed the residential areas and all laterals are laid in alleys. The laterals are made up of one and one-half inch pipe. All laterals are valved from the loop, while the loop is also valved so that one-half of the system can be shut off at any time for repairs.

All of the piping system is made of standard pipe, shop-treated with one coat of primer, wrapped with impregnated asbestos covering, treated with one coat of asphalt and wrapped with kraft paper. All welded joints and service connections were field-treated in the same manner.

The entire system, including service connections, was welded and tested to 100 lbs. per sq. in. The lines were buried with a minimum of 24 inches of cover.

The plant and distribution system were designed, engineered and constructed by Parkhill-Wade Inc. of Los Angeles with H. W. Wickstrom as engineer in charge of construction.

The speed with which the plant and distribution system was installed is a matter of comment, with the splendid cooperation of Blythe city officials and residents playing a prominent role. The city was opened and closed so



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KEROTEST MANUFACTURING CO.
PITTSBURGH, PA.

quickly, as a result of this cooperation, that the entire job was completed before any of the business houses or residents had any opportunity to experience any inconvenience due to the construction operations.

■ ■

Liquefied Petroleum Gas Demand Increases 38.8%

The market demand for liquefied petroleum gases, exclusive of exports, increased 38.8 per cent in 1936 as compared with 1935, according to reports submitted to the United States Bureau of Mines, Department of the Interior. Sales of liquefied petroleum gases for domestic use, gas manufacturing, industrial fuel and chemical manufacturing, and fuel for internal combustion engines totalled 106,652,000 gallons in 1936 as compared with 76,855,000 gallons in 1935. Exports of liquefied petroleum gases increased from 4,237,000 gallons in 1935 to 4,897,000 gallons in 1936, a gain of 15.6 per cent.

■ ■

Compressed Gas Association Meets June 24-25

The Compressed Gas Manufacturers' Association will hold its annual summer meeting on June 24-25 at the Seaview Golf Club, Absecon, N. J. Special accommodations are being arranged on the Pennsylvania Railroad for members leaving New York on the afternoon of June 24.

The executive board will hold its June meeting on the twenty-fourth.

M. H. Spear of Consolidated Edison Co. Passes

Maynard H. Spear, who was associated with the Consolidated Edison Co., of New York, Inc., for many years passed away May 19 at the Fifth Avenue Hospital.

Mr. Spear was president of the New York and Queens Gas Co. from 1928 until June, 1936, when the company was merged into Consolidated Edison. Since then he has been manager of the Queens district of the company.

He was born in Brooklyn, N. Y., on March 29, 1874, and attended Brooklyn Polytechnic Institute and Stevens Institute of Technology.

His first job was with the Bayonne Chemical Works. In 1896 he entered the employ of The Standard Gas Light Co., New York, as foreman, staying there until 1899 when he went with the Hornell Gas Light Co., Hornell, N. Y. In 1902 he became superintendent of the Newton and Flushing Gas Co., at Flushing, which was merged with the New York and Queens Gas Co., in 1904. In 1906 he became manager of the company, in 1908 secretary and general manager, in 1920 vice-president, in 1924 a director, and in 1928 president.

■ ■

Rate Revisions Authorized By Wisconsin Commission

Rate revisions, including an annual decrease for normal users of $170,000 and an increase of about $50,000 for small users, have been authorized by the Wisconsin Public Service Commission for service supplied by the Milwaukee Gas Light Co., Wauwatosa Gas Co., West Allis Gas Co., and the Lake Shore Gas Co.

The reductions will be distributed as follows:

Milwaukee Gas Light Co., $102,000; Wauwatosa Gas Co., $28,000; West Allis Gas Co., $18,000; Lake Shore Gas Co., $22,000.

■ ■

Spokane Appliance Sales Double 1936 Record

Gas appliance sales in Spokane, Wash. during the first 4 months of 1937 are more than double the sales for the same period in 1936, according to a Pacific Coast Gas Association release. Range sales total 199 as against 55 last year, refrigerators 49 as against 5, automatic storage water heaters 42 as against 14, and other appliances in proportion. The Spokane Gas & Fuel Co. is taking full advantage of the new prosperity, and in addition to reconnecting many dead services, has laid more new services so far in 1937 than during the entire year 1935.

■ ■

Bottled Gas Group Names Fair Trade Committee

Recommending that the National Bottled Gas Association take immediate steps to sponsor a code of fair trade practices, the Midwest Section at its convention in Cedar Rapids, Iowa, named a committee of three to co-operate in the undertaking. Those on the committee are G. W. Bach, Skelgas, chairman; J. L. Locke, Northwestern Blaugas; and B. G. Symon, Shell.

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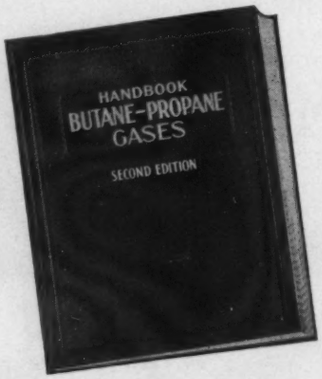

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GAS
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Florence, Ariz., to Receive Natural Gas June 15

Natural gas will be turned into the distribution system at Florence, Ariz., and the Arizona State Prison near there about June 15, according to K. J. Payne, manager, Natural Gas Servive Co., Phoenix, Ariz., which will supply the gas. Construction of the pipe line to Florence was started about May 5.

The state prison will use gas for its boilers, heating plant, and residences in connection with the prison. Annual consumption is estimated at 20,000,000 cu. ft. a year. In the town of Florence about 200 consumers will receive gas.

Natural Gas Service Co., of which M. A. Moody is president, now serves Casa Grande, Coolidge and Superior. At Casa Grande, where gas was available on February 2, there are 250 consumers, at Coolidge, 300, and at Superior, 520.

An alfalfa dehydrating plant at Casa Grande began operation, using natural gas, on May 1. The rated capacity is 15 M c.f. of gas an hour, and the plant will operate about 20 hours a day. It is estimated that the plant will be open for 10 months each year. The first unit cost $75,000. Plans call for installation of additional units in the future.

Natural Gas Service Co. obtains its gas from the Jal Fields in New Mexico.

■ ■

Hot Springs, N. M. to Have $60,000 Butane Plant

A $60,000 butane gas plant is to be built in Hot Springs, N. M., according to decision of the city council. An engineer has been investigating the project for the council for a year.

It is estimated that 200 meters will be served at the start.

The project is to be financed with revenue bonds, according to Mayor A. J. Burleson, and Standard Oil Co. is to supply the butane. Bids have not yet been advertised.

■ ■

Midwest Bottled Gas Men Meet At A.G.A. Convention

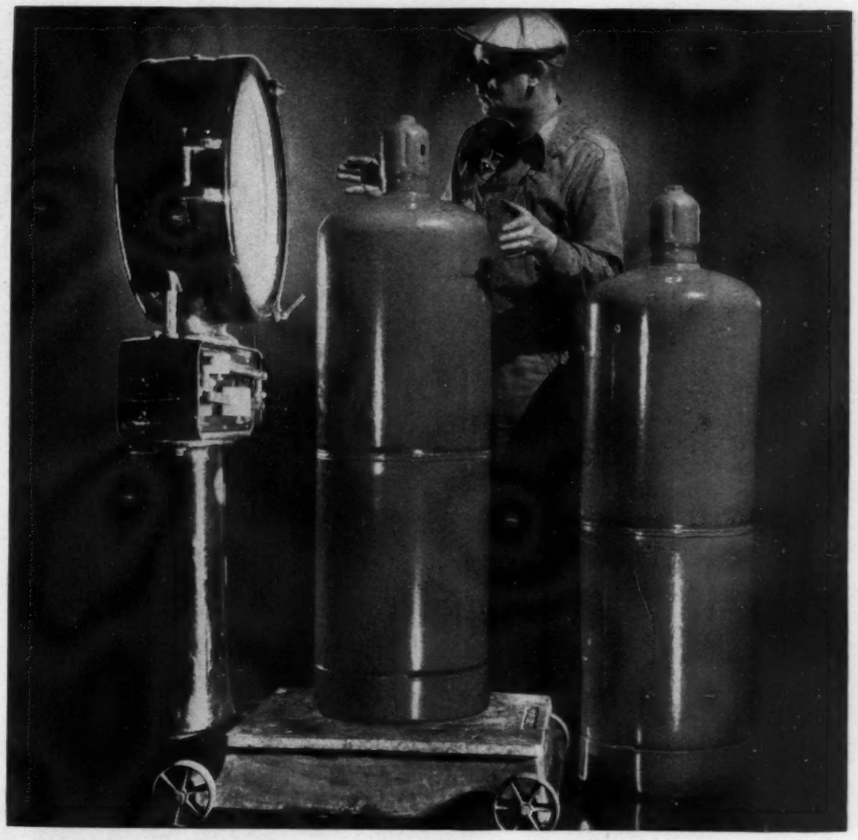
The Midwest Section of the National Bottled Gas Association will hold its next meeting in Cleveland, Ohio, during the annual convention of the American Gas Association, which convenes during the week of September 27. The bottled gas meeting has tentatively been set for September 29.

■ ■

W. E. Kelly of P. G. and E. Dies

William E. Kelly, manager at Alameda, Calif., for Pacific Gas and Electric Co., died recently. He had been Alameda manager since 1926.

Strength and Weight are Balanced



The economies of lighter weight and the dependable service afforded by ample strength have been successfully combined in Hackney cylinders.

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Competing for the Domestic Market

(Continued from Page 16)

power, more co-operation. The task is one that requires the united effort of every unit of the industry, company, manufacturer and dealer. Lacking a General Electric or Westinghouse, what these great concerns do individually for the electric industry, the gas companies and the manufacturers of gas equipment and appliances can accomplish by working collectively through the agency of the A.G.A. Member gas companies should support and encourage through their purchasing power those manufacturers who are progressive in their sales, advertising and development programs, and they must be willing to pay a price for appliances which will enable the appliance manufacturers to do a real selling and development job. There has been far too much attention paid to price and not enough to quality. It is easier to sell a good article than a poor one, and what is most important, the buyer will stay sold. On the other hand, the manufacturers must do their part. They should increase their advertising and selling expense; they should continually strive to improve their products as to efficiency of operation, quality of performance, and beauty of design. They must be willing to change—scrap the old for the new. All of this is a necessary part of the cost of doing business and I am sure that most member companies so recognize and will pay the price that such progressive policy requires. Through increased sales, improved methods, manufacturers should strive to keep costs down, for after all, society as a whole only benefits as the purchasing power increases.

The industry needs a much more extensive research program. I like that definition of research which says "Research is trying to find out what you are going to do when you cannot keep on doing what you are doing now." It fits so nicely the present situation the gas industry is in—we must decide what we are going to do because we are pretty generally realizing that we cannot keep on as we have been doing. Research is the life blood of every business today. It is the tool of progress and any industry that fails to use this tool, that fails to provide for a comprehensive research program, will be smothered in the dust of the advancing horde. Ranges and water heaters are susceptible of great improvement, both as to performance and efficiency. They need to be streamlined. I predict that the gas range five years from now will have little resemblance to the range of today. The industry needs a program of Pure Research. In these days of atom smashing, electrons, protons, and all the other minute worlds that go to make matter and energy as modern physics and chemistry are revealing their mysteries to us today, is it fantastic to believe that gas—natural or manufactured—may be the raw material for by-products that will open up new horizons? The establishment of graduate gas research fellowships in the better equipped universities, at a modest annual expense, would provide an effective agency for such a program of Pure Research.

So much for present difficulties and what needs to be done. Let's turn for a moment to the brighter side of the picture. What are the encouraging signs? Foremost, I would list the awakening of the industry to the real situation we are facing. A danger once recognized is half conquered. There is a new spirit in the industry, one of optimism and courage. The National Advertising campaign in a very large measure is responsible for this awakening. It has improved employee morale, stimulated executives to action, and brought dealer, company and manufacturer closer together. This program and that of the "Mystery Chef" have demonstrated that gas companies can get together in a common cause; that we can do collectively what is impossible individually. These programs are having their effect upon the public mind and they are bringing valuable by-products such as news stories and movie tie-ins. Manufacturers of appliances have been stimulated to increased sales and advertising effort and several of them are now doing an excellent job of national advertising and sales promotion. Let's be sure we encourage them with our support. There is a better appreciation

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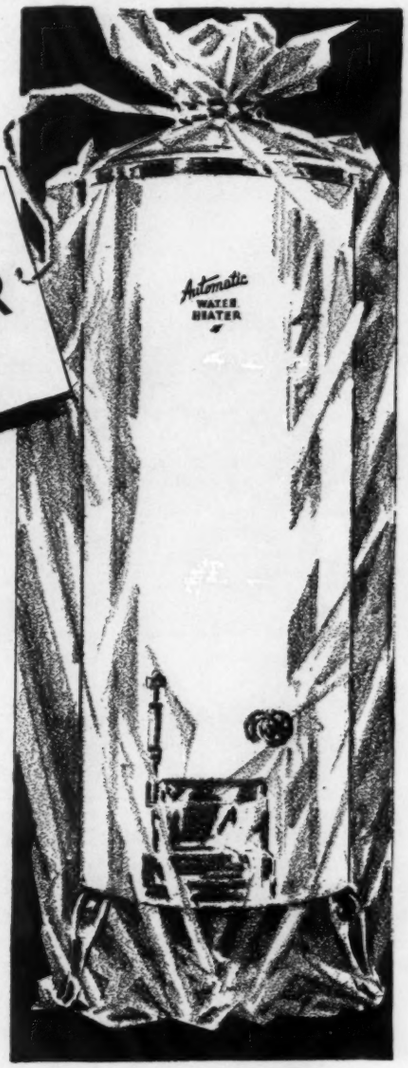

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SOMETHING NEW in our regular annual water heater promotion! A full newspaper size Water Heater Broadside in rotogravure, mailed to 150,000 potential buyers . . . *with copies left over for dealer distribution.* This is the biggest, most impressive piece of direct-by-mail on Automatic Gas Water Heaters this company has ever put out, and right along with it we are publishing a full schedule of big, action-getting newspaper advertisements . . . *one each week in 211 newspapers.* A letter explaining details of this great June event, together with proofs of our broadside and newspaper advertisements are now in the mail.

●

A UNITED
Gas
INDUSTRY EVENT

G 206-637

of the value and importance of research, both on the part of member companies and the equipment and appliance manufacturers. Under the direction of the domestic and industrial research committees of the Association, the Laboratory has carried forward many important research activities that have resulted in marked improvement in domestic and industrial appliances. Manufacturers are seeing the wisdom and necessity of greater individual research effort and some member companies are doing work which promises much for the future of our industry. The A.G.A. laboratory, under the able direction of Mr. Conner and the Laboratory Committee, is an asset whose value is not thoroughly appreciated by our industry, but I assure you it is the envy of our competitors. It will be a tremendous factor in the industry's future progress.

Several state and sectional associations are showing the way. The advertising work of the New England and the Indiana Gas Associations is a fine example. These Associations are planning and directing a cooperative advertising campaign for member companies. The Indiana Association is also undertaking a program of research in connection with Purdue University. All gas associations might well inaugurate similar activities. The combined effort cannot fail to have a pronounced effect upon the public attitude and employee morale.

The very recent establishment of a Home Modernizing and Gas Promotion bureau as part of the headquarters activities, fills an important need. New homes are being built by the thousands all over the land and old homes are being made over. If the gas industry is to occupy the place it should in these homes, there must be organized at once a well directed, carefully planned, intensive campaign to secure this business. Old kitchens are being modernized. The Rochester survey shows that half the housewives are interested in improving their kitchen layouts. The gas industry must be prepared to direct and help. What a field this opens up for our Home Service departments and what a market for new appliances! The time is now—we must act. These, as well as other promotion activities, will be the function of this new Association bureau.

Other bright spots in the gas picture are a better understanding of the economics of the domestic business on the part of top executives of gas, electric and combination companies; the Gas Building at the New York World's Fair; better dealer co-operation, and everywhere a greater sales effort.

The industry has a brilliant past —what of the future? A start has been made. There must be a continuation, a great enlargement of present beginnings. The domestic market is the battleground; its possession is essential to the future of our industry. Economics, performance are in our favor, but there must be greater sales effort, more showmanship, more advertising, more research, more dealer outlets, better rate structures, more cooperative effort.

The economic future of our industry is sound. Its salvation is in our hands.

■ ■

Kill Natural Gas Tax Measure

A proposal to place a tax of 5 per cent (in lieu of other taxes) upon the gross earnings of companies transporting and distributing natural gas in Minnesota was defeated in the Minnesota Senate by a vote of 41 to 21. The proposal was in the form of an amendment to the omnibus tax bill. The amendment was first adopted, then thrown out by a vote of 34 to 31. Later, when the measure was again presented, it was turned down, 41 to 21.

No. 300

JOHNSON NO. 300

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METALBESTOS GAS VENT AND FLUE PIPE

appreciate the interest displayed in this product by those attending the Kansas City convention where it was exhibited. Letters and orders received from all parts of the country indicate that our claims as to its merits are more than justified.

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Clark Brothers Awarded Contracts for Compressors

CLARK Brothers Co., Olean, N. Y., has been awarded contracts for compressors on two main gas pipe lines for booster station operation. One is the Cabot Co. project leading to Rochester, N. Y. The other is on the line running from Monroe, La., to Memphis, Miss., operated by the Memphis Gas Co. of the latter city. Both these installations will be 600-hp., 6-cylinder super 2-cycle right angle engines, with the power cylinders vertical and the compressors horizontal.

Due to the compactness of these engines, they can be fully tested on blocks at the factory before shipment, and, when installed, they require much less floor space than conventional horizontal engines formerly used for compressor service. The approximate weight of one of these units is 75,000 pounds.

An original feature of this engine is the oil-cooled piston. It also includes force-feed lubrication to all bearings, with the oil passed through an outside water-cooled oil cooler, so that temperatures on lubricating oil are always much lower than the metal with which it comes in contact. Approximately 100 units of this design have been built and shipped since they were placed on the market in the spring of 1936.

■ ■

Aksarben Natural Gas Co. In Expansion Move

Permission has been granted to the Aksarben Natural Gas Co., Cambridge, Neb., by the Nebraska State Railway Commission, to issue and sell bonds in the amount of $66,000 and stock in the amount of $100,000 on condition that $16,000 of bonds and $25,000 of stock are placed in escrow with the Commission until the company can show increased assets in an amount sufficient to release the escrow.

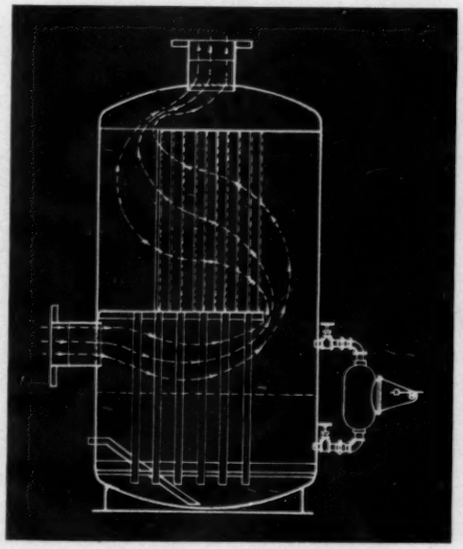
The Aksarben Natural Gas Co. is the successor to the Southern Nebraska Natural Gas Co., Cambridge. Franchises have been granted the firm in Cambridge, Arapahoe, Holbrook, Indianola, Culbertson, Kearney, and Trenton, and the company is now serving natural gas in Holbrook. The Aksarben company has taken an option on the Citizens Gas Co. of McCook, Neb., which now serves manufactured gas.

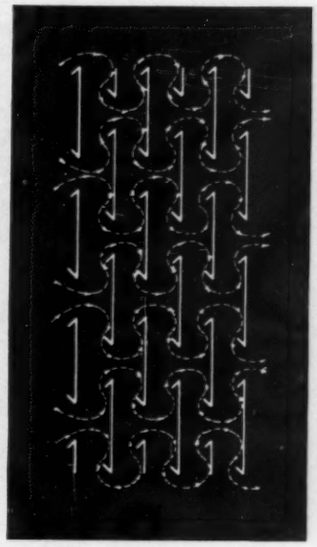
■ ■

C. S. Fox, Consolidated Edison Executive, Passes

Clifford Stanley Fox, vice-president of the East River Gas Co. of Long Island City, N. Y., until merger of the Consolidated Edison Co. of New York and its subsidiaries last December, died in April at his home in Flushing after a brief illness. Following the merger of the Consolidated properties, Mr. Fox had charge of gas distribution throughout Queens. He had been with the company for nearly 40 years.

CONSTANT FLOW REVERSAL IS THE SECRET OF





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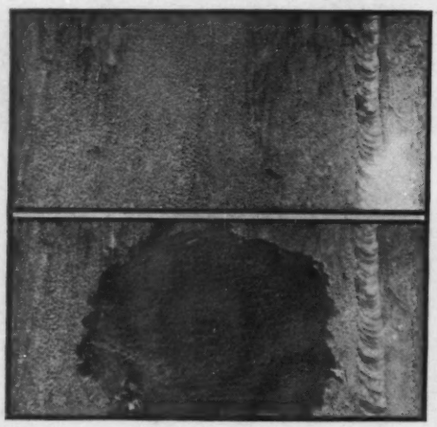

Safe Under Spray

Upper illustration shows surface of pipe scaled and discolored with cooling tower spray. Lower illustration shows scale and NO-OX-ID scraped off and the metal surface black and perfectly protected. Save your metal with NO-OX-ID.

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INDUSTRIAL GAS SALES MEN IN JUNE CONFERENCE MEETING

"USING the most up-to-date tools to secure industrial gas business" is the theme of the National Conference on Industrial Gas Sales, sponsored jointly by the Industrial Gas Section of the American Gas Association and the Midwest Industrial Gas Sales Council, which is to be held at the Palmer House, Chicago, June 8 and 9. Ralph L. Manier, industrial heat engineer, Central Division Staff of Hudson Power Corp., Syracuse, N. Y., is chairman of the Industrial Gas Section, and Lawrence R. Foote, industrial gas engineer, Central Illinois Electric & Gas Co., Rockford, Ill, is chairman of the Midwest Industrial Gas Sales Council.

The Program Committee, of which Frank H. Trembly, Jr. is chairman, has selected as speakers outstanding figures in their respective fields. An all-day inspection trip to three large plants with notable gas furnace installations will be made on the last day of the conference.

The two general subjects selected for discussion are "Modern Gas Radiant Tube Applications" and "Controlled Atmospheres in the Modern Industrial Furnace." George M. Parker, Mississippi River Fuel Corp., St. Louis, Mo., will present a paper on "Applications of Gas Radiant Tubes to Continuous Enameling Furnaces—Facts and Figures."

Another paper, "Application of Gas Radiant Tubes to Galvanizing," will be presented by A. M. Thurston, The East Ohio Gas Co., Cleveland, Ohio.

The newest use for this type of heating will be considered in a paper on "Application of Gas Radiant Tubes to Short Cycle Malleable Annealing Furnaces," by C. H. Martin, field engineer for Holcroft & Company, and Eclipse Fuel Engineering Co.

A recent adaption will be detailed in a paper entitled, "Application of Gas Radiant Tubes to Batch Type Enameling Furnaces," by F. S. Markert, Ferro Enamel Corp., Cleveland, Ohio, who has been active in the development and application of this type of heating.

The first paper on the second general subject is entitled, "Application of Controlled Atmospheres to Bright Annealing of Copper." It will be delivered by William A. Darrah, president, Continental Industrial Engineers, Inc., Chicago. A paper on the "Design and Application of Equipment for the Generation of Controlled Atmospheres with Respect to Annealing and Hardening Processes" will be presented by William O. Owen, Surface Combustion Corp. The final paper will be on "Gas Application in Glass Plants."

R. L. MANIER

L. R. FOOTE

All papers will be presented on Tuesday. Wednesday is reserved for the all-day inspection trip. Among the plants to be visited are the Geo. M. Clark division of the American Stove Co., Harvey, Ill., Republic Steel Co., Chicago, and the Revere Copper & Brass Co., Chicago.

The day before the Sales Conference the Managing Committee of the Industrial Gas Section will hold its last meeting of the current Association year. Other committee meetings that will be held Tuesday and Wednesday include the Process & Comfort Air Conditioning Committee of which L. A. Bickel, Dallas, Texas, is chairman; and the Ferrous Metals Committee, whose chairman is Robert G. Guthrie, consulting metallurgist, The Peoples Gas Light & Coke Co., Chicago and past president of the American Society for Metals.

■ ■

Iroquois Promotes Schaefer

Harry Schaefer, head of the heating department of the Iroquois Gas Corp., Buffalo, N. Y., for several years, has been appointed merchandising manager of the company, succeeding George H. Schlatter who resigned to accept a similar position with The Laclede Gas Light Co., St. Louis, Mo.

Earl Desmond has been named assistant merchandising manager.

■ ■

Co. Applies to Extend Line

Northern Natural Gas Co. has applied to the city council of St. Paul, Minn., for permission to extend a natural gas pipe line from the Ford plant to the Waldorf Paper Products Co.

Sales Engineer Seeks Post With Utility, Manufacturer

GAS has been asked to announce that a man with considerable gas industry experience is seeking a position as sales engineer with either a gas utility or a manufacturer. The applicant is 32 years old, unmarried, and has no physical defects. Besides elementary and grammar school, his training includes technical school, the Associated Gas & Electric Co. training course, and the American Gas Association Industrial Gas salesmanship course.

The applicant can furnish references and has had experience selling industrial, commercial, and space heating equipment. Some of the more important applications of the gas sold include heat treating, metal melting, boiler firing, burning brick, vitreous enameling, core baking, and bread baking.

Replies should be sent to *GAS*, 810 So. Spring Street, Los Angeles, Calif.

■ ■

Canadian Sales Outlet For Condensation Engineering

Condensation Engineering Corp., Chicago, Ill., manufacturers of the Vitroliner condensation eliminator, Howle heat extractor, and the Howle gas-fired incinerator, has consummated a deal whereby their products will be manufactured and sold in Canada by Vilas Enamel Products, Ltd., of Cowansville, Quebec, and 137 Wellington St., Toronto.

L. I. Underwood is managing director of Vilas Enamel Products, Ltd.

215 PORCELAIN ENAMEL MEN MEET AT INSTITUTE FORUM

WITH an official registration of 215 enamelers and students from all sections of the country, the Porcelain Enamel Institute Forum at the University of Illinois, May 5, 6 and 7, was the most successful and best attended project ever conducted in the industry's history.

R. G. Calton of the Tennessee Enamel Manufacturing Co., Institute president, proposed that an "internship" be created for ceramic students who desire to affiliate themselves with plants in the porcelain enameling industry.

Other speakers at the first session, during which Dr. A. I. Andrews of the University of Illinois presided, were Dean H. H. Jordon of the University, Emerson P. Poste, prominent consulting engineer, and Prof. C. W. Parmelee, also of the University. The second session of the Forum was devoted to discussions of testing, design, and the reduction of shipping losses.

W. N. Harrison of the National Bureau of Standards, and chairman of the Institute's standardization of tests committee, conducted a symposium on testing of enamels. Among the papers presented were those by E. C. Greenstreet, Standard Gas Equipment Corp.; Howard A. Wetter, Chicago & North Western Railway; E. L. Lasier, Titanium Alloy Manufacturing Co., vice-president of the Institute; E. C. Aydelott, Benjamin Electric Manufacturing Co.; Wesley G. Martin, A. O. Smith Corp.; W. H. Pfeiffer, Frigidaire Corp.; F. E. Hodek, Jr., General Porcelain Enameling & Manufacturing Co., vice-president of the Institute; F. S. Markert, Ferro Enamel Corp.; Herman L. Cook, Norge Corp.; Jay Simons, Westinghouse Electric & Manufacturing Co.

Sessions of the hollow-ware, cast iron, and sheet iron groups were conducted on the final afternoon of the forum.

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Hydraulic PIPE PUSHER

One man, standing in a comfortable position, can exert a pressure of 40,000 pounds on the pipe clamp.

Here is a real improved pipe pusher that permits one man to stand in a comfortable position and send pipe where it is wanted, simply by pumping the handles. It is compactly built, easy to handle and simple to set up and operate. Because of its time and labor-saving features, it is often able to pay for itself on the very first job.

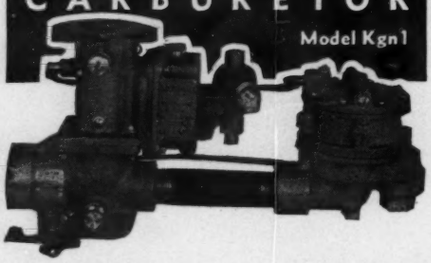
The Greenlee Hydraulic Pipe Pusher is self-contained. It operates on a notched steel base, which permits making a push of from 4 to 7 feet, depending on the length of base used, without changing the pipe clamp. When it reaches the front end of the base, it is pushed back to the opposite end, and the quick-acting clamp is then reset. Pumping the handles sets up a pressure within two oil cylinders to push the pipe. This provides a smooth-acting, powerful mechanism that is flexible and exceptionally simple. It will push pipe up to 4-inch, has eight speeds for varying soil conditions and will exert a maximum pressure of 40,000 pounds on the pipe clamp.

WRITE TODAY for COMPLETE DETAILS

GREENLEE TOOL CO., 1700 Columbia Ave., ROCKFORD, ILLINOIS

The ONLY Carburetor Combining All the Advantages of Both Gas and Gasoline Fuels

ENSIGN COMBINATION *Gas & Gasoline* CARBURETOR Model Kgn1



In this carburetor, Ensign alone makes it possible for owners of industrial and stationary engines to secure all the advantages of both gas and gasoline, as well as the convenience and economy of alternate use of the two fuels. Utmost efficiency in the utilization of both gas and gasoline is assured by scientific, service-proved design and the highest precision in construction. Numerous applications consistently show the Ensign Combination Carburetor effects maximum power delivery at minimum fuel costs.

This carburetor offers an exclusive and highly worthwhile merchandising opportunity for gas companies. For complete details and description write for Bulletin 84.

ENSIGN CARBURETOR COMPANY, LTD.
Huntington Park, California

Butane Equipment: Gasoline Carburetors for Industrial Engines and Tractors

Chicago Branch: 2644 So. Michigan Avenue. Distributors with Stocks: A. W. Schuller, Inc., Tulsa, Okla.: The Binkley Co., Oklahoma City, Okla.: Portable Rig Co., Houston, Texas: H. G. Makelim, Oakland, California, T. V. Supply Company, Wichita, Kansas.

GOODMAN USED SINCE 1897 2" HANDLE & LOCKING SLEEVE GAS MAIN STOPPER

The Goodman Stopper

The Reliable Shut-off for Street Mains

Equipped with Improved Patented Locking Sleeve, which locks both handles to the pipe. Stopper cannot slip. Gas cannot pass.

Safety Gas Main Stopper Co.
523 Atlantic Avenue, Brooklyn, N. Y.

Pac. Coast Rep.: C. B. Babcock Co.
475 Eleventh Street
San Francisco, California

The Big Name in HEATING and AIR CONDITIONING is MUELLER-MILWAUKEE

Determination of Losses On High Pressure Lines

(Continued from Page 68)

more important. So long as the amount of gas measured out of the entire pipe line system is only a few per cent less than the amount of gas purchased and produced, the officials of any pipe line company are usually not much disturbed about leakage figures on each particular section of line. Whether accurate or not, as long as the leakage reported for each section, or for the whole system does not increase, it is reasonably certain that leakage is not increasing. Hence, it is often the case that the accuracy of leakage reports is not stressed until the system total commences showing an increased volume of unaccounted-for gas. Then quite a bit of effort is made to eliminate all possible errors and spot the leakage in some particular section.

Much dependence is placed on the work of line walkers to keep leakage down. These men usually detect any large leaks soon after they appear and report them long before they would be detected from a leakage report. Most pipe line companies also maintain regular inspectors, sometimes called "leak-hounds," who make periodic surveys of all exposed pipe and fittings, using soap suds to detect small leaks and barring lines when necessary. The leaks found by line walkers and inspectors are usually repaired before they have any appreciable effect on the leakage reports in the office. In other words, most companies depend on a proper maintenance program to keep leakage down. As to the volume of gas actually lost, however, they must depend on office reports.

■ ■

General Controls Issues Folder on Products

A new 4-page folder, "Controls for the Gas Industry," has just been prepared by the General Controls Co. Complete engineering data and prices are given covering "General" thermostats and solenoid valves for domestic and industrial gas applications. These folders, punched for binding in standard catalogs, may be had by writing General Controls, 1368 Harrison Street, San Francisco, California.

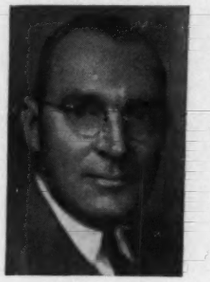
■ ■

Four New Bulletins on Gages

Several new bulletins on recording and controlling gages have been published by The Bristol Co., Waterbury, Conn. These are bulletins No. 483, No. 484, No. 485, and No. 486. Copies will be sent upon request to anyone interested in the subject of gages.

Pape in Charge of Crane Co. Valve and Fitting Sales

P. R. MORK, vice-president in charge of sales, Crane Co., Chicago, announces the coordination of all activities concerned with the estimating, engineering or sales of valves, fittings, pipe, and fabricated piping into one unit, the Valve and Fitting Department, with W. H. Pape as manager. Mr. Pape enters his new position with 25 years' experience covering a wide range of industrial applications of Crane products. His first activity was in heavy railroad construction followed by similar work on New York subways. In 1914 he entered the oil industry, serving subsequently as designer, operator, and sales engineer. He joined the Crane organization in 1927 as special representative in New York and later in the Boston territory.



W. H. PAPE

The former Industrial Sales department and the Engineering Sales department are consolidated into a new section—the Engineering Sales section of the Valve and Fitting department with E. Burke as manager, G. F. Wright, assistant manager in charge of estimating and other activities dealing with fabricated pipe and allied products, and W. F. Lahl, assistant manager, supervising the industrial zone men in the field. J. H. Barker is manager of the Sales Quotation section of the Valve and Fitting department. Other sections of the new consolidated department include Pipe sales,Marine sales, Oil sales, Railroad sales, and Water Works sales.

■ ■

Harry E. Kerr, Barber Gas Burner President, Taken by Death

Harry E. Kerr, for 19 years president of The Barber Gas Burner Co., Cleveland, Ohio, died on May 7 in the Anglo-American Hospital, in Havana, Cuba, following a one-day attack of pneumonia. Mr. Kerr had not been in good health for a year prior to his final illness, and sailed for Havana on May 1 to recuperate.

Funeral services were held in Cleveland and interment was in Detroit, Mich.

During the early years of his life, Mr. Kerr was connected with various brass foundry and manufacturing companies and later was a partner in the Kerr-Bailey Co.

In 1918 he organized the Cleveland Gas Burner & Appliance Co., manufacturing the Barber gas burner, and became its president and active head. This company was reorganized in 1930 under the name of The Barber Gas Burner Co. and Mr. Kerr continued as president until his death.

He was one of the most widely known persons in the gas appliance manufacturing field. He took an active part as a member of the Manufacturers' Division of the American Gas Association and was the pioneer in developing conversion gas burners and their application to coal-fired design heating appliances.

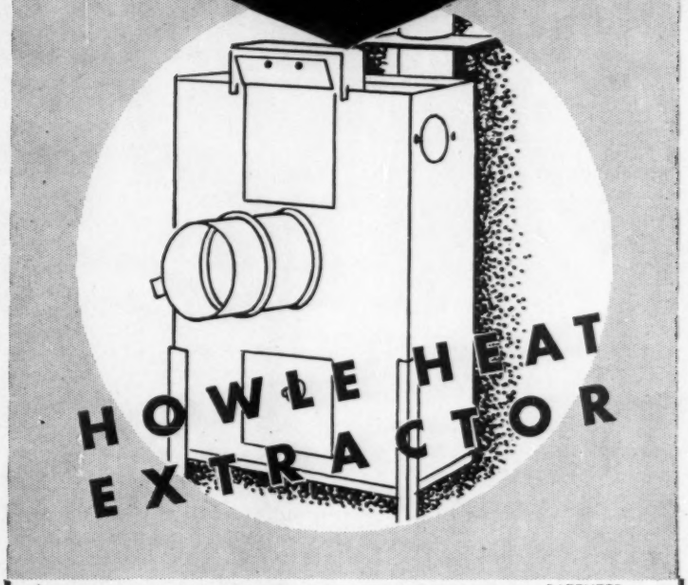
■ ■

H. C. Cooper, Hope Natural President, Receives 40-Year Service Award

Eight hundred employees of Hope Natural Gas Co., Clarksburg, W. Va., honored Howell C. Cooper, president, on April 22, upon his completion of 40 years of service with the Hope group of companies. Dinner parties at four banquet halls preceded a program in a high school auditorium, at which Ralph Gallagher, New York City, a director of the Standard Oil Co. of New Jersey, who is in charge of all natural gas activities of Standard Oil, was the principal speaker. A number of other officials of Standard Oil Co. attended and also officials from Hope properties.

A forty-year pin was presented to Mr. Cooper.

THE FIRST ELEMENT OF HEAT ECONOMY IS *Heat Loss Control*



PATENTED

- Incorporates all the features of the practical, industry-famous Condensation Eliminator.
- Has a low installation cost. No operating costs because it automatically prevents heat escape.
- Increases the operating efficiency of the heating plant by eliminating the necessity of constantly warming new, cold air and by warming the first floor.
- In reality it is an additional heating unit because it raises basement temperatures from 10° to 22°.
- You cannot touch its front surface, but you can lay your cheek against its rear. That's how efficient the Howle Heat Extractor is in preventing heat loss.

Complete information and prices on our entire line of condensation equipment sent on request.

All Canadian inquiries should be directed to Mr. L. I. Underwood, District Manager of Vilas Enamel Products, Ltd., Cowansville, Quebec, or 137 Wellington Street, West, Toronto, Ontario

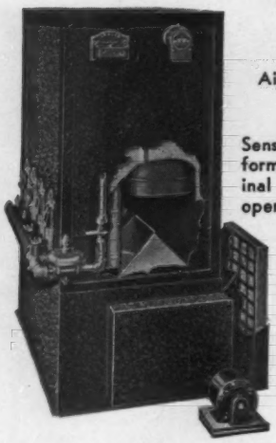
CONDENSATION ENGINEERING CORPORATION

TELEPHONE MONROE 1031

335 South Western Avenue, Chicago

NEW LOW COST

FRASER



Gas Furnace and Winter Air Conditioning System

Sensational in performance, low original cost and low operating cost.

Write for details today.

Manufactured by

Fraser Furnace Company

Stockton, Calif.

Distributed by

H. R. Basford Company

San Francisco Los Angeles

▲

The world's largest hotel — The Stevens in Chicago — recently installed gas service to fuel two large boilers.

▼

Stevens Hotel Installs Gas Fuel

WITH the signing of contracts with the Peoples Gas Light and Coke Co., Chicago, late in April, The Stevens Hotel—the world's largest—adopted gas as fuel for two of its large boilers.

Gas is being applied to one 686- and to one 597-hp. Stirling boiler to operate at 200 per cent rating. Five No. 38 Mettler Entrained Combustion gas burner units are being used in the large boiler; four units have been installed in the smaller boiler. The Hotel's remaining boilers are continuing the use of solid fuel for winter service. Smoot controls consisting of a master regulator and two over-fire combustion regulators will be used with equipment being installed at the hotel.

The Stevens has 3,000 rooms, and several floors are given over to residential apartments. Otto K. Eitel is managing director of the hotel.

In Los Angeles

it's the

HOTEL CLARK

Fifth and Hill

555 Rooms-Baths

from $2.50 PER DAY

Famous for Good Food from Coast to Coast

RIGHT downtown in the center of things. Easy chairs, sleep-inspiring beds, large rooms with luxurious fittings.

P. G. B. MORRISS
Manager

McFarland Ends 18-Year Affiliation with Worthington

J. T. McFarland, who was recently appointed sales manager of the natural gas engine division of Lycoming Manufacturing Co., Williamsport, Pa., joins the company following 18 years' association with Worthington Pump & Machinery Corp. In the May issue of GAS the statement was erroneously made due to a typographical error, that Mr. McFarland had been with Worthington Pump & Machinery Corp. for 18 months. During his many years with Worthington, he was an engineer in the oil fields, manager in charge of sales in the El Paso and St. Louis districts, and from 1934 until joining Lycoming Manufacturing Co. he was western manager of Worthington's oil and gas power division.

■ ■

American Gas Products Corp. Buys Ensign-Reynolds

American Gas Products Corp., a subsidiary of American Radiator & Standard Sanitary Corp., has purchased from Consolidated Edison Co. the Ensign-Reynolds, Inc., manufacturers of industrial gas equipment.

Through the acquisition of this company, American Gas Products Corp. has broadened its line and will now be prepared to serve industrial companies with various types of industrial gas-burning equipment such as gas filters, ribbon burners, inspirators, air cleaners, flame distributors, gas compressors, and special burner tips used in the printing, baking, plastic, dye, and many other industries.

■ ■

Flannery Joins Emsco

Emsco Derrick & Equipment Co., Los Angeles, Calif., announces the appointment of Chas. A. Flannery formerly with Consolidated Steel Co., of Los Angeles, as sales manager of the Fabricated Division. Mr. Flannery has a valuable background of extensive experience in the modern plate fabricating field.

■ ■

Thomas McCarter Re-elected

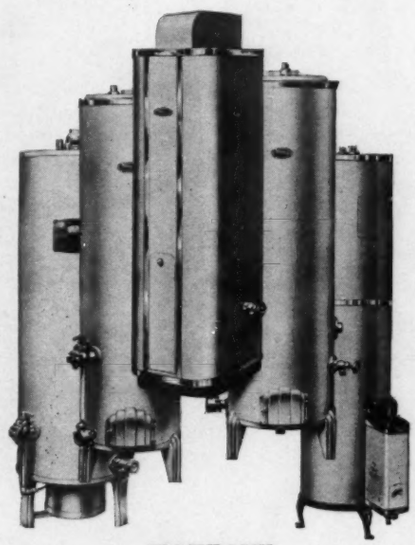
Thomas N. McCarter was re-elected president of Public Service Corp. of New Jersey, Newark, N. J., for the thirty-fifth time. He has held the office continuously since the corporation was organized in 1903.

■ ■

New Office at El Cajon, Calif.

San Diego Consolidated Gas & Electric Co., San Diego, Calif., on May 1 opened an office in El Cajon under the direction of the district agent at La Mesa. Elmer Blossom has been placed in charge of the El Cajon office.

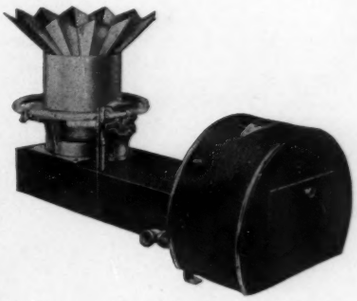
Welsbach PRODUCTS



HOTZONE
GAS WATER HEATERS

It is most important to the Gas Industry that each appliance sold and installed be of known performance

. . . . Welsbach products have and will continue to merit consideration

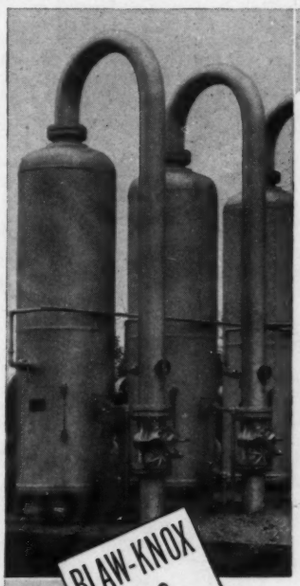


FURNACE BURNERS

Welsbach Products are scientifically designed to give perfect service.

. . . Built by pioneers in the manufacture of gas burning appliances since 1887.

Welsbach Company
Gloucester City, N. J. — Branches — Chicago, San Francisco



A Good Way to Reduce COMPRESSOR MAINTENANCE EXPENSE

● Install Blaw-Knox Gas Cleaners to insure that gas going to the compressors is clean—free from foreign substances. This not only eliminates maintenance expense caused by dirty gas but insures continuity of operation.

BLAW-KNOX COMPANY
2032 Farmer's Bank Building, Pittsburgh, Pa.

BLAW-KNOX GAS CLEANERS

BLAW-KNOX GAS CLEANERS

BLAW-KNOX

Statistics Bureau Issues Study of Gas Prices

Under the title, "Changes in Retail Prices of Gas," the United States Bureau of Labor Statistics publishes its Bulletin No. 629, a statistical study of manufactured and natural gas prices from 1923 to 1936. The study covers 50 cities for each of which indexes are computed based upon a use of 10.6 therms (range only) and 30.6 therms (range and water heater). The price information included in this booklet will be carried forward quarterly hereafter in the Bureau's pamphlet "Retail Prices." Clearly shown by the method employed is the downward trend of rates, particularly for those consumers using natural gas in larger quantities.

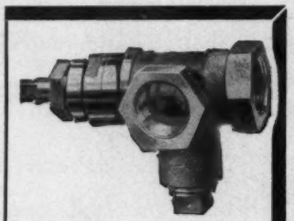
■ ■

Middle West Corp. Earmarks $360,000 for Construction

The Middle West Corp. reports proposed gas construction in 1937 amounting to $360,000 for its operating subsidiaries. This amount includes a customer extension outlay to connect 2,400 new domestic gas customers.

G-501-R-Flathead Recessed Iron Body Brass Plug Gas Stop

"by Kitson" . . . The Surest Guarantee of Quality for Forty Years!



G-450—High Pressure Gas Meter Shut-Off Valve

K-CO TRADE MARK

KITSON COMPANY
2409-15 Westmoreland St. Philadelphia, Pa.
Kitson Safety Devices (Lovekin Patents) for Domestic Water Heaters
Quality Brass Goods for Gas, Water and All Plumbing Uses
ESTABLISHED 1897

K-CO TRADE MARK

MUELLER GAS DISTRIBUTION EQUIPMENT

The time-tested Mueller line includes Mueller Evenflow Service Regulators, Gas Stops, Service Stops, Stove Stops, Drilling and Tapping Machines, service boxes, meter trims and similar equipment. Write for description and prices.

MUELLER CO., Los Angeles, Calif.
Factories: Decatur, Ill.; Chattanooga, Tenn.; Los Angeles, Calif.; Sarnia, Ont.
Branches: New York and San Francisco

BASO

THERMO ELECTRIC SAFETY CONTROL FOR GAS BURNING APPLIANCES

BOILERS ★ FURNACES ★ CONV. BURNERS ★ SPACE HEATERS ★ UNIT HEATERS ★ AIR CONDITIONERS OVENS ★ RANGES ★ WATER HEATERS, ETC.

GAS VALVE SERIES 500

MILWAUKEE GAS SPECIALTY CO.
MILWAUKEE ★ WISCONSIN

ELECTRIC SWITCH SERIES 600

Bryant Announces 1937 Gas Heating Campaign

The Bryant Heater Co., Cleveland, Ohio, announces details of its publicity and merchandising plans for the 1937 gas heating season.

National advertising to consumers will be carried in The Saturday Evening Post, Life, American Home, House and Garden and House Beautiful. First insertions in the consumer campaign were in the May 29 *Saturday Evening Post* and the May 17 *Life*. Other insertions will appear at regular intervals during the summer and fall.

A campaign to promote Bryant's Silica Gel Dehumidifier for use in industrial dry-air processing and comfort conditionings started in the May issue of *Chemical and Metallurgical Engineering*, and architects will be urged to specify gas heating in a series starting in the June *Architectural Forum*.

Gas company and dealer tie-up material for the pre-selling activities have been announced in an attractive portfolio just released. These materials consist of a series of four rotogravure mailing pieces.

■ ■

Display Room for Natural Gas Engines at K. C. Gas Co.

Two Waukeska De Luxe gas engine power units providing air conditioning and power generation for a display room adjacent to the main sales floor have been installed by the Kansas City Gas Co., Kansas City, Mo., in the downtown office. They constitute a working display of the modern natural gas engine used for two different types of load.

One of the units drives an AC generator furnishing electricity for all lights and electric motors used in the room. The second unit drives a Freon compressor for air conditioning the room.

■ ■

C. B. Babcock Offices Moved

The C. B. Babcock Co. of San Francisco, Calif., distributors of gas equipment, recently announced the removal of their offices and warehouse to 475 Eleventh Street, San Francisco. The C. B. Babcock Co. represents on the Pacific Coast the General Gas Light Co., Kalamazoo, Mich., Safety Gas Main Stopper Co., Brooklyn, N. Y., and Johnson Gas Appliance Co., Cedar Rapids, Iowa, as well as other manufacturers selling to the Pacific Coast.

■ ■

Pipe Firm Official Dies

Dr. Frederick C. Langenberg, vice-president of the United States Pipe and Foundry Co., Burlington, N. J., died in April. Dr. Langenberg joined the executive staff of the company in 1929 as organizer and director of the research laboratory. He was an authority on ferrous metallurgy.

JUL 0 1939

THEN . . .

The same long-lived material

A CENTURY AGO—
This cast iron gas main has been in continuous service in Philadelphia for more than 100 years.

AS NOW

but with modern mechanical joints

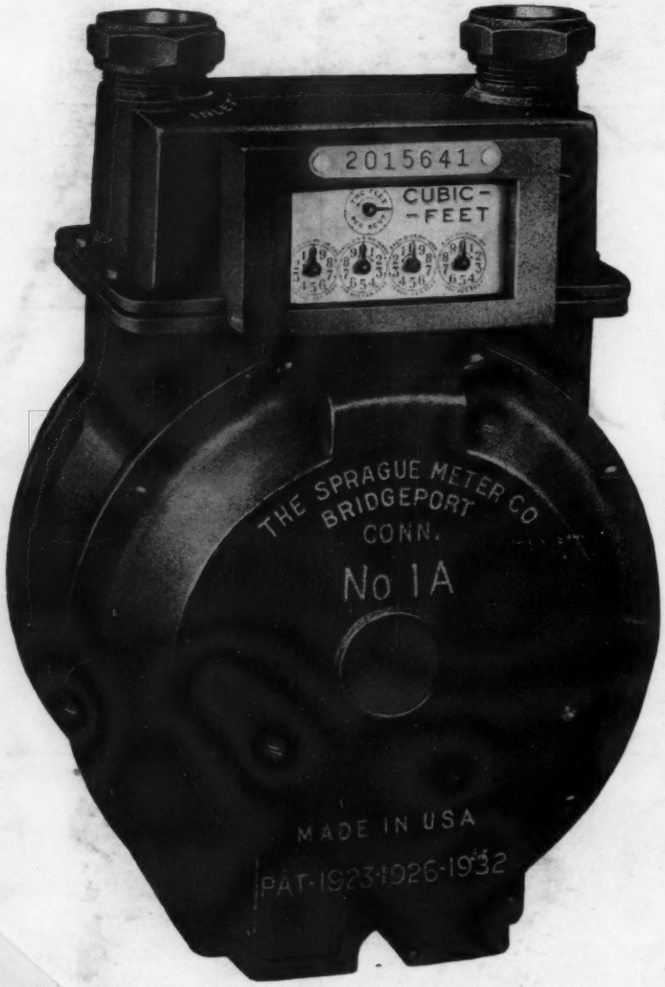
TODAY—Cast iron pipe with bottle-tight mechanical joints being installed for gas distribution service.

Installation and operating conditions in distribution service are not what they were a century ago, but cast iron pipe maintains its traditional efficient service. Abreast of every advance in metallurgy and resourceful in the development of modern joints, CIPRA members furnish the gas industry with the same long-lived, economical pipe equipped with bottle-tight mechanical joints for modern operating conditions. Sizes from 1¼ to 84 inches.

CAST IRON PIPE

THE STANDARD MATERIAL FOR UNDERGROUND MAINS

The Cast Iron Pipe Research Ass'n, Thos. F. Wolfe
Research Engr., 1013 Peoples Gas Bldg., Chicago



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SPRAGUE METERS

REDUCE OPERATING COSTS

THE SPRAGUE METER COMPANY

LOS ANGELES + + SAN FRANCISCO

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